Note inst. in remarks column

Test scheet : VWW Edition : 03.94

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R433-12 Type number : 0 460 494 347

Customer Part-No. :

Customer-specific information

Customer : W

: 1,9 L UD A3 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed Charge press. hPa: 750

Setting value mm: 4.30...4.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

A01

Speed 1/min: 1250 Charge press hPa: 750

Setting value bar: 5.40...6.00

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250 Charge press. hPa: 750

Del. quantity cm3/

1000s.: 50.00...51.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5

1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 450 Speed

Del. quantity cm3/

1000s.: 37.20...43.20

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450

Del. quantity cm3/

1000s.: 16.00...18.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0

Residual-Delivery Setting

1/min: 550 Speed

Del. quantity cm3/ 1000s.: 7.00...8.00

Shutoff

electromagnet Volt: 12 cm3/: 2.0 Dispersion

1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2600 Charge press hPa: 750

Del. quantity cm3/

1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 37.00...43.00 mind 1000s.: 37.0

Shutoff Supply-pump electromagnet Volt: 12 pressure bar: 7.40...8.00 Shutoff Load-dependent start of delivery: electromagnet Volt: 12 Inj.-qty.dif.measurement: Overlow quantity at overflow valve: 1/min: 1250 Speed Inj. qty. cm3/1st speed 1/min: 700 difference 1000s.: -7.0...-11.0 # Charge press. hPa: 750 Shutoff Shutoff electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.30)
2nd speed 1/min: 2100
Charge press. hPa: 750
Shutoff electromagnet Volt: 12 TD-travel dif.measurement correttore anticipo iniezione (SV) 1/min: 1250 1. Speed TD-travel difference mm: -1.9...-2.1 # Shutoff electromagnet Volt: 12 : 55.60...152.90 electromagnet Volt: 12 Overflow quantity cm3/10s: (40.60...167.90) Inspection-pump test specifications Test specifications in parentheses Delivery-quant. and breakaway char.: Timing-device characteristic: 2nd speed 1/min: 2750 1/min: 2100 Charge press. hPa: 750 Shutoff 2nd speed Charge press hPa: 750 electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 2600
Charge press. hPa: 750
Shutoff mm: 8.00...8.60 TD travel mm: (7.50...9.10) Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 Charge press hPa: 750 mm: 4.30...4.50 TD travel electromagnet Volt: 12 Del. quantity cm3/: 9.00...13.00 mm: (3.60...5.20) 1000s.: (7.00...15.00) Shutoff 1/min: 2400 electromagnet Volt: 12 8th speed 4th speed 1/min: 750 Charge press. hPa: 750 Charge press hPa: 750 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 32.50...42.50
1000S.: (31.50...43.50)
9th speed 1/min: 2100 mm: 1.50...2.10 mm: (1.00...2.60) TD travel Shutoff electromagnet Volt: 12 Charge press. hPa: 750 Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12 Del. quantity cm3/: 42.00...44.00 1000s.: (40.80...45.20) 1st speed 1/min: 750 Charge press. hPa: 750 Supply-pump 1/min: 1250 12th speed Charge press. hPa: 750 Shutoff bar: 4.30...4.90 pressure Shutoff electromagnet Volt: 12
Del. quyntity cm3/: 50.00...51.00
1000S.: (48.30...52.70)
20th speed 1/min: 700
Charge press. hPa: 750
Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Charge press. hPa: 750 Supply-pump pressure bar: 5.40...6.00 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2100 Charge press. hPa: 750 electromagnet Volt: 12 Del. quantity cm3/: 43.50...46.50 1000\$.: (42.80...47.20) 21th speed 1/min: 450

1/min: 1250 Charge press. hPa: -1st speed Shutoff TD-travel : -2.5...2.9 1 electromagnet Volt: 12 Del. quantity cm3/: 37.20...43.20 1000s.: (34.70...45.70) mm: difference Shutoff electromagnet Volt: 12 Mech. shutoff: SP press.—dif.measurement: pompa di mandata (FP): Electr. shutoff: 1st speed 1/min: 1250 Supply pump-1st speed 1/min: 450 pressure : -0.1...-0.3 " Del. quantity cm3/: 0.00...3.00 difference bar: -1000s.: (0.00...3.00) Shutoff Shutoff electromagnet Volt: 12 electromagnet volt: -2nd speed 1/min: 1250 Supply pump-Damper set qty.: : -1.0...-1.4 ' pressure difference bar: -LFG-settina: Shutoff solidale con carcassa: electromagnet Volt: 12 Idle delivery: Part-load del.at 3rd ini.-gty. 1st speed 1/min: 450 terza fermo della portata Shutoff stop (EGR set) electromagnet Volt: 12 scarico) (ARF) Del. quantity cm3/: 16.00...18.00 gaz d'échappement-ARF) 1000s.: (13.00...21.00) mm: 12.0 Spacing High Idle: 1st speed 1/min: 1000 Charge press. hPa: 750 Shutoff 1st speed 1/mi: 550 Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 34.00...36.00 Del. quantity cm3/: 16.00...18.00 1000s.: (3≥.00...38.00) 1000s.: (13.00...21.00) Automatic starting fuel delivery: Residual: 1/min: 180 1st speed 1.Rotação 1/min: 550 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...55.00 1000s.: (35.00...55.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...8.00 1000s.: (5.50...9.50) 1/min: 380 2nd speed Load-dependent start of delivery: Shutoff Inj.-qty.dif.measurement: electromagnet Volt: 12 Del. quantity cm3/: 31.00...51.00 1000s.: (31.00...51.00) 1st speed 1/min: 1250 Inj.-qty. cm3/ : -4.5...-6.5 " difference 1000s.: -3rd speed 1/min: 100 Shutoff Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Inj.-qty. cm3/: 0.0...+3.0 Z' electromagnet Volt: 12 Del. quantity cm3/: 37.00...43.00 1000s.: (32.50...47.50) difference 1000s.: -Shutoff Shutoff electromagnet: electromagnet Volt: 12 Cut-in TD-travel dif.measurement: min voltage : 10.0 Rated voltage : 12.0 correttore anticipo iniezione (SV):

Mounting and assembly dimensions:

Designation

K mm: 3.6...3.8 mm: KOT MS mm: 1.1...1.5 mm: - xK mm: I P=0.8..3.0

XK mm: LP=0.8..3.0 Ya mm: 37.6...41.6 Yb mm: 50.4...63.3

Remarks:

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

Pump in stepped LDA

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Note inst. in remarks column

Test scheet : W : 03.94 Edition

replaces

Calibrating oil : ISO-4113

: VE4/9F2000R569 Injection pump Type number : 0 460 494 352

Customer Part-No. :

Customer-specific information

Customer : W

: 028.Z JG5 1.9 L Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle holder

assembly : 1 688 901 000

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed Charge press. hPa: 750

Setting value mm: 4.30...4.70

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 hPa: 750 Speed Charge press

Setting value bar: 6.90...7.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 750

Del. quantity cm3/ 1000s.: 47.50...48.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5

1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 750 Speed Del. quantity cm3/

1000s.: 37.00...38.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 475 Speed

Del. quantity cm3/

1000s.: 6.50...8.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2160 Speed Charge press hPa: 750

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 35.00...65.00 mind 1000S.: 35.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000 Charge press hPa: 750

mm: 6.70...7.50 TD travel

mm: (6.40...7.80)

A05

Shutoff	+ Del. quantity cm3/: 41.0042.00
electromagnet Volt: 12	† 1000s.: (38.5044.50)
3rd speed 1/min: 1500	† 2nd speed 1/min: 2190
Charge press hPa: 750	† Charge press. hPa: 750
TD travel mm: 4.304.70	+ Shutoff
mm: (3.805.20)	+ electromagnet Volt: 12
Shutoff	+ Del. quantity cm3/: 0.003.00
electromagnet Volt: 12	+ 1000s.: (0.003.00)
4th speed 1/min: 900	+ 4th speed 1/min: 2150
Charge press hPa: 750	Charge press. hPa: 750
TD travel mm: 1.101.90	+ Shutoff
mm: (0.802.20)	+ electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 12.0032.00
electromagnet Volt: 12	10005.: (12.0032.00)
ecoel anagrice foce. 12	5th speed 1/min: 2160
Supply-pump pressure characteristic:	
supply pump pressure than acteristic.	+ Charge press. hPa: 750 + Shutoff
1st speed 1/min: 2000	
	+ electromagnet Volt: 12
Charge press. hPa: 750	+ Del. quantity cm3/: 10.0014.00
Supply-pump	10005.: (6.0018.00)
pressure bar: 8.108.70	+ 6th speed 1/min: 2170
Shutoff	+ Charge press. hPa: 750
electromagnet Volt: 12	+ Shutoff
2nd speed 1/min: 1500	+ electromagnet Volt: 12
Charge press. hPa: 750	+ Del. quantity cm3/: 0.0012.00
Supply-pump	† 1000s.: (0.0012.00)
pressure bar: 6.907.50	† 8th speed 1/min: 2140
Shutoff	† Charge press. hPa: 750
electromagnet Volt: 12	+ Shutoff
3rd speed 1/min: 900	+ electromagnet Volt: 12
Charge press. hPa: 750	+ Del. quantity cm3/: 22.0038.00
Supply-pump	1000s.: (20.0040.00)
pressure bar: 5.506.10	+ 9th speed 1/min: 2000
Shutoff	+ Charge press. hPa: 750
electromagnet Volt: 12	+ Shutoff
	+ electromagnet Volt: 12
Overlow quantity at overflow valve:	+ Del. quantity cm3/: 42.0044.00
4.2, 2, 2, 2, 1,	10005.: (40.8045.20)
1st speed 1/min: 750	+ 12th speed 1/min: 1500
Charge press. hPa: -	Charge press. hPa: 750
Shutoff	+ Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Overflow : 41.7083.40	Del. quyntity cm3/: 47.5048.50
quantity cm3/10s: (26.7098.40)	10005.: (45.8050.20)
2nd speed 1/min: 2000	15th speed 1/min: 900
Charge press. hPa: 750	Charge press. hPa: 750
Shutoff	+ Shutoff
electromagnet Volt: 12	
Overflow : 55.60139.00	+ electromagnet Volt: 12
quantity cm3/10s: (40.60154.00)	pel. quantity cm3/: 41.0042.00
quarterty (115/105: (40.60154.00)	10008.: (38.5044.50)
Coldinament and breakers about	+ 18th speed 1/min: 750
Delivery-quant. and breakaway char.:	Charge press. hPa: -
	+ Shutoff
And mod Africa 2000	electromagnet Volt: 12
1nd speed 1/min: 900	Del. quantity cm3/: 37.0038.00
Charge-air pressure-setting	† 1000s.: (34.5040.50)
point hPa: 250	†
Shutoff	+ Mech. shutoff:
electromagnet Volt: 12	†
	∔ Electr. shutoff:

1st speed 1/min: 475 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 475 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 6.50...8.50 1000s.: (3.50...11.50) 1/min: 700 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 230 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...85.00 1000s.: (45.00...85.00) 1/min: 340 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 20.00...40.00

1000s.: (20.00...40.00)

1/min: 100 4th speed Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 35.00...65.00 1000s.: (35.00...65.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 : 12.0 Rated voltage

Mounting and assembly dimensions:

Designation

mn: 3.2...3.4 K KF mm: KOT mm: 1.0...1.4 MS mm: 38.6...40.6 Ya mm: 66.0...76.0 Yb

Remarks:

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0
ccm/1000 S.

Note remarks

Test sheet

: 30.03.94 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 074 885

Injection pump

Pump designation : PES4M55C32ORS167 EP type number : 0 410 054 960

Governor

Governor design. : RSF375/2000M56-14

Governer no. : 0 420 021 271

Customer-spec. information Customer : MB-PKW

Engine : 0M601

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 : 1-3- 4- 2

Firing order

Phasing : 0-90-180-270

Tolerance $+ - \circ : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 3.8...3.9

100 s: (3.7...4.0)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000Speed

: 38.0...39.0 Del.quantity

1000 : (37.0...40.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.65...9.15

Speed rpm : 2200

4th rack travel in: 2550

rpm : 0.00...1.00Speed

SET IDLE CONTROL LEVER

POSITION

: 1000 rpm

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

rpm : 375

80A

Rack travel in mm: 5.2 Testina: Speed : 250 rom Minimum rack trave: 10.20 : 375 Speed rpm Rack travel in mm : 5.10...5.30 : 1000 Speed **rpm** Maximum rack trave: 1.45 SET IDLE AUXILIARY SPRING rpm : 450 Speed Rack travel in mm : 3.80...4.00 : (3.70...4.10) TORQUE CONTROL Torque control curve - 1st version : 1000 1st speed CDM Rack travel in m: 12.10...12.20 : 1800 2nd speed rom Rack travel in m: 11.80...12.00 3rd speed rpm : 2000 Rack travel in m: 11.70...11.90 Aneroid/Altitude Compensator Test 1st version Setting : 1000 Speed rpm Pressure hPa : 940 Rack travel mm : 0.00...0.20 Measurement 1/min: 1000 Speed 1st pressure hPa : 900 Rack travel in m: 0.30...0.50 2nd pressure hPa : 750 Rack travel in m: 1.40...1.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 1800 rpm Del.quantity cm3/: 40.0...41.6 1000 s: (39.0...42.6) cm3 : 2.50 1000 s: (3.0) Spread : 2000 Speed rpm

Del.quantity cm3/: 40.0...42.0 1000 s: (39.0...43.0) : 2.50 Spread cm3 1000 s: (3.00) STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 54.0...0.0 1000 s: (54.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Speed rpm : 2200
Del.quantity cm3/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm3 : 2.50 1000 s: (3,00) LOW IDLE Speed rpm : 375 Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0) cm3 : 1.00 Spread 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) Speed : 425 rpm Rack travel in mm : 6.50...8.10 Del.quantity cm3/: 12.00...20.00 1000 s: hPa : 400 Vacuum Remarks: Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet

: MB

Edition

: 09.05.94

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 074 889

Injection pump

Pump designation : PES4M55C32ORS172

EP type number Governor

: 0 410 054 958

Governor design. : RSF375/2300M75-2

Governer no.

: 0 420 021 166

Customer

Customer-spec. information : MB-PKW

Engine

: 0M601

1st version kW

: 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening

pressure, bar

: 147...150

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order

: 1-3-4-2

A11

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ}$: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.3...3.4

100 s: (3.2...3.5)

Spread

2nd speed

cm3 : 0.2

100 s: (0.3)

rpm : 375.0

Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 0.6...0.7 100 s: (0.5...1.0)

Spread

cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1100 Del.quantity

: 33.0...34.0 1000 : (32.0...35.0) cm3 : 2.50

Spread

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.20...8.60

Speed rpm : 2500 4th rack travel in: 2950

Speed

rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed

rpm

: 1000

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 6.5 Spread Testing: rpm : 250 Speed Minimum rack trave: 11.00 rpm : 375 Rack travel in mm : 6.40...6.60 Speed Rack travel in mm: 2.50 rpm : 650...750 Speed Speed rpm : 1000 Maximum rack trave: 1.5 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 400 1st version Rack travel in mm : 5.50...5.70 : (5.40...5.80) Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Spread Rack travel in m: 12.30...12.40 2nd speed rpm : 1800 Rack travel in m: 11.70...11.90 LOW IDLE 3rd speed rpm : 2300 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test Spread 1st version Setting Speed : 1000 rpm (ELA) Pressure hPa : 950 Rack travel mm : 0.00...0.20 Measurement 1/min: 1000 Speed 1st pressure hPa : 900 Vacuum Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Remarks: Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1800 Del.quantity cm3/ : 34.0...35.5 1000 s: (33.0...36.5) cm3 : 2.50 Spread 1000 s: (3.0) Aneroid pressure h: 1100 rpm : 2300 Speed Del.quantity cm3/: 33.0...35.0 1000 s: (32.0...36.0)

cm3 : 2.501000 s: (3.00) STARTING FUEL DELIVERY : 100 rom Del.quantity cm3/: 54.0...0.0 1000 s: (54.0...0.0) Rack travel in mm : 20.10...0.00 Aneroid pressure h: 1100 rpm : 2300 Rack travel in mm : 8.20...8.60 Del.quantity cm3/: 18.0...22.0 1000 s: (17.0...23.0) cm3 : 2.50 1000 s: (3.00) Speed rpm : 375 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0) cm3 : 1.00 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE Speed rpm : 425 Rack travel in mm : 8.10...9.70 Del.quantity cm3/: 14.00...22.00 1000 s: hPa : 400 : KARD 1000 1/MIN : (-8.3...11.3 MM3/H.) Sliding sleeve pre-travel = 6.5 mm TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of

starting cam) up to 1000 1/min.

Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Note remarks

Test sheet

: MB

Edition Replaces

: 30.03.94 : 18.12.92

Test oil

: ISO-4113

Combination no.

: 0 400 074 890

Injection pump

Pump designation : PES4M55C32ORS183

EP type number Governor

: 0 410 054 955

Governor design. : RSF375/2300M75-1

Governer no. : 0 420 021 163

Customer-spec, information Customer

: MB

Engine

: 0M601-ECE

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly

: 1 688 901 111

Opening

pressure, bar

: 147...150

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 1.70...1.80

: (1.65...1.85)
Rack travel in mm : 20.00...22.00

Firing order

: 1-3-4-2

A14

Phasina : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm : 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 3.6...3.7

100 s: (3.5...3.8)

Spread

cm3 : 0.2

100 s: (0.3)

rpm : 375.0

Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 0.6...0.7

Spread

2nd speed

100 s: (0.55...1.00) cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1100 Del.quantity

: 36.0...37.0 1000 : (35.0...38.0)

Spread

: 2.50 cm3

1000 : (3.60)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.80...9.20

: 2500 Speed MON

4th rack travel in: 2900

: 0.00...1.00 Speed MCT

SET IDLE CONTROL LEVER POSITION

: 1000 rpm

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: 12...14

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 6.8 Testing: rpm : 250 Speed Minimum rack trave: 11.00 rpm : 375 Rack travel in mm : 6.70...6.90 Rack travel in mm: 3.00 Speed : 650...750 rom Speed men : 1000 Maximum rack trave: 1.95 SET IDLE AUXILIARY SPRING rpm : 500 Rack travel in mm : 4.90...5.10 : (4.80...5.20) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.90...13.00 2nd speed : 1600 T DMI Rack travel in m: 12.40...12.60 3rd speed rpm : 2300 Rack travel in m: 11.70...11.90 Aneroid/Altitude Compensator Test 1st version Settina Speed : 1000 man hPa : 940 Pressure Rack travel mm : 0.00...0.20 Measurement Speed 1/min: 1000 1st pressure hPa : 900 Rack travel in m: 0.30...0.50 2nd pressure hPa : 750 Rack travel in m: 1.40...1.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100

: 1600 Speed rpm Del.quantity cm3/: 36.0...37.5 1000 s: (35.0...38.5) cm3 : 2.50Spread 1000 s: (3.0) Aneroid pressure h: 1100 Speed rpm : 2300 Del.quantity cm3/ : 36.0...38.0 1000 s: (35.0...39.0)

Spread cm3 : 2.501000 s: (3.00) STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 54.0...0.0 1000 s: (54.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Aneroid pressure h: 1100 rpm : 2500 Speed Rack travel in mm : 8.80...9.20 Del.quantity cm3/ : 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.50 1000 s: (3.00) LOW IDLE Speed rpm : 375 Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0) Spread cm3 : 1.00 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) rpm : 425 Speed Rack travel in mm : 8.20...9.80 Del.quantity cm3/: 13.0...21.0 1000 s: hPa : 400 Vacuum Remarks: : FB = 16° : ARD= - 1,55 MM Sliding sleeve pre-travel = 6.5 mm TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.

D.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet : MB

: 09.05.94 Edition Replaces : 25.09.92 Test oil : ISO-4113

Combination no. : 0 400 074 891

Injection pump

Pump designation : PES4M55C32ORS169 EP type number : 0 410 054 959

Governor

Governor design. : RSF375/2300M75 Governer no. : 0 420 021 160

Customer-spec. information Customer : MB

: 0M601-ECE Engine

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Openina

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (2.95...2.15)

Rack travel in mm : 20.00...22.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed nom: 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.3...3.4

100 s: (3.2...3.5)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.6...0.7 100 s: (0.55...1.00)

cin 3 : 0.1Spread 100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

: 33.0...34.0 Del.quantity

1000 : (32.0...35.0) cm3 : 2.50 1000 : (3.00) Spread

RATED SPEED

1st version Control Lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

rpm : 2500 Speed 4th rack travel in: 2900

Speed : 0.00...1.00 rom

SET IDLE CONTROL LEVER

POSITION

Speed : 1000 rpm

Rack travel in mm : 1.20...1.30

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 6.5 Testing: Speed rpm : 250 Minimum rack trave: 11.00 rpm : 375 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 660...760 rpm : 1000 Speed Maximum rack trave: 1.30 SET IDLE AUXILIARY SPRING rpm : 400 Speed Rack travel in mm : 5.30...5.50 : (5.20...5.60) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.30...12.40 rpm : 1800 2nd speed Rack travel in m: 11.70...11.80 3rd speed rpm : 2300 Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test

1st version Setting Speed

rpm : 1000 Pressure hPa : 950

Rack travel mm : 0.00...0.20

Measurement

1/min: 1000 Speed

1st pressure hPa : 900

Rack travel in m: 0.50...0.70

2nd pressure hPa : 750 Rack trayel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Spread

Aneroid pressure h: 1100

Speed rpm : 1800 Del.quantity cm3/ : 33.0...34.5 1000 s: (32.0...35.5)

cm3 : 2.50

1000 s: (3.0) Aneroid pressure h: 1100 rpm : 2300 Speed

Del.quantity cm3/: 34.0...36.0

1000 s: (33.0...37.0)

cm3 : 2.50 Spread 1000 s: (3.00)

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100 rpm : 2500 Speed

Rack travel in mm : 8.50...8.90 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0)

Spread cm3 : 2.50 1000 s: (3.00)

LOW IDLE

Speed rpm : 375 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0)

Spread cm3 : 1.001000 s: (1.50)

SETTING PNUEUMATIC FAST IDLE

(ELA)

Speed rpm : 425
Rack travel in mm : 8.50...8.90
Del.quantity cm3/ : 22.0...26.0
1000 s: (21.0...27.0)

Vacuum hPa : 400

Remarks:

: KARD 1000 1/MIN : (-9.0...11.0 MM3/H.)

: I = 3 A

Sliding sleeve pre-travel = 6.5 mm

TESTING PNEUMATIC SHUTOFF DEVICE -Luntrol lever at idle stop. With n = 375 1/min. and pu = 450 mbar,

control rod must move quickly to

 $control-rod\ travel = 0\ mm$

CHECKING THE IDLE-SPEED AUXILIARY

SPRING CUTOFF

-Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

Test sheet

: 30.03.94 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 074 898

Injection pump

Pump designation : PES4M55C320RS172

EP type number

: 0 410 054 958

Governor

Governor design. : RSF375/2300M56-10

Governer no. : 0 420 021 130

Customer-spec, information

Customer : MB-PKW

Engine : 0M601-Abgl. MU90

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Openina

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

: 1-3-4-2 Firing order

Time to cyl. no. : 1

BASIC SETTING

Tolerance + - °

Phasing

rpm: 900 1st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.3...3.4

100 s: (3.2...3.5)

: 0-90-180-270

: 0.00 (1.00)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0 Rack travel in mm : 6.4...6.6

Del.quantity cm3/: 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1100

Del.quantity

: 33.0...34.0 1000 : (32.0...35.0) cm3 : 2.50

Spread

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.30...8.70

rpm : 2500 Speed

4th rack travel in: 2950

rpm : 0.00...1.00Speed

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 900

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

A20

Speed mpm : 375 Rack travel in mm: 6.5 Testing: Speed rpm : 250 Minimum rack trave: 11.00 Speed rpm : 375 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.50 Speed : 620...720 COM Speed : 1000 rpm Maximum rack trave: 1.5 SET IDLE AUXILIARY SPRING rpm : 450 Speed Rack travel in mm : 4.80...4.90 : (4.70...5.00) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900
Rack travel in m: 12.30...12.48
2nd speed rpm : 1400
Rack travel in m: 11.95...12.15 3rd speed rpm : 2300 Rack travel in m: 11.30...11.50 Aneroid/Altitude Compensator Test 1st version Setting : 900 Speed mon. hPa : 950 Pressure : 0.00...0.20 Rack travel mm Measurement 1/min : 900 Speed 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/ : 33.0...34.6 1000 s: (32.0...35.5) cm3 : 2.50 Spread 1000 s: (3.0) Aneroid pressure h: 1100

rpm_ : 2300

1000 s: (33.0...37.0)

Del.quantity cm3/: 34.0...36.0

cm3 : 2.50 Spread 1000 s: (3.00) STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Ameroid pressure h: 1100 Speed rpm : 2500

Det.quantity cm3/ : 20.0...24.0

1000 s: (19.0...25.0)

Spread cm3 : 2.50

1000 s: (3.00) LOW IDLE rpm : 375 Speed Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0) Spread cm3 : 1.00 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) Speed rpm : 425 Rack travel in mm : 8.10...9.70 Del.quantity cm3/: 14.00...22.00 1000 s: hPa : 400 Vacuum Remarks: Sliding sleeve pre-travel = 6.5 mm TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and bu = 450 mbar. control rod must move quickly to control-rod travel = 0 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°,

control-rod travel deduction must be

Speed

greater than $0.2 \ \text{mm}$ after switchover point (of starting cam).

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Mote remarks

Test sheet

Edition : 30.03.94

Replaces

Test of

: ISO-4113

Combination no.

: 0 400 074 899

Injection pump

EP type number

Pump designation: PES4M55C32ORS167

: 0 410 054 960

Governor

Governor design. : RSF375/1700M69-4

Governer no.

: 0 420 021 139

Customer spec, information Customer

: MB-NFZ

Engine

: 0M601-2.3L

: 49.0

1st version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening

pressure, bar : 147...150

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke min : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-3-4-2

Phasing

: 0-90-180-270

Tolerance + - °

: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm: 12.30...12.40

Del.quantity cm3/: 3.7...3.8

100 s: (3.6...3.9)

Spread

cm3 : 0.2

100 s: (0.3)

2nd speed

rpm : 375.0

Rack travel in mm: 5.5...5.7

Del.quantity cm3/: 0.6...0.7

Spread

100 s: (0.55...1.00) cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1100 Del.quantity

: 37.0...38.0

1000 : (36.0...39.0)

Spread

: 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0
3rd rack travel in: 9.00...9.50

cm3

Speed

rpm : 1800 4th rack travel in: 2300

Speed

riom : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

: 1000 **CDIII**

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

A23

Speed rpm : 375 Rack travel in mm : 5.6	+ Speed rpm : 1650 Del.quantity cm3/ : 37.039.0 1060 s: (36.540.5)
Testing: Speed rpm : 250	+ Spread cm3 : 2.50 + 1000 s: (3.00)
Minimum rack trave: 10.20 Speed rpm : 375	Aneroid pressure h: 1100 Speed rpm : 500 *
Rack travel in mm : 5.505.70 Rack travel in mm : 3.00	Del.quantity cm3/: 32.534.1 1000 s: (31.535.1)
Speed rpm : 580680 Speed rpm : 1000	+ Spread cm3 : 2.50 + 1000 s: (3.00)
Maximum rack trave: 1.50	Aneroid pressure h: 1100 Speed rpm : 800**
SET IDLE AUXILIARY SFRING Speed rpm : 420	Del.quantity cm3/: 35.030.6 1000 s: (34.037.6)
Rack travel in mm : 4.404.60 : (4.304.70)	+ Spread cm3 : 2.50 1000 s: (3.00)
TORQUE CONTROL Torque control curve - 1st version	I INTERMEDIATE RATED SPEED
1st speed	Control lever
2nd speed rpm : 1400 Rack travel in m: 11.7012.00	position degrees: STUPSER 40° Rack travel in mm : 00,3
3rd speed rpm : 1650 Rack travel in m: 11.4011.70	Speed rpm: 500 - Speed rpm: RW-DIFF.50°-40°
4th speed rpm : 500* Rack travel in m: 11.6011.90	STARTING FUEL DELIVERY
5th speed rpm : 800** Rack travel in m: 12.0012.30	THING FOLE WELLVERY
Aneroid/Altitude	- Speed rpm : 100 - Del.quantity cm3/ : 52.00.0
Compensator Test	1000 s: (52.00.0) Rack travel in mm: 20.100.00
1st version	+ HIGH IDLE
Setting Speed rpm : 1000	† 1st version
Pressure hPa : 950 Rack travel mm : 0.000.20	Aneroid pressure h: 1100 Speed rpm : 1800
Measurement	Rack travel in mm : 9.009.50 Del.quantity cm3/: 29.033.0
Speed 1/min: 1000	1000 s: (28.034.0) - Spread cm3 : 2.50
1st pressure hPa : 900 Reck travel in m: 0.500.70	1000 s: (3.00)
2nd pressure hPa : 750 Rack travel in m: 1.802.20	LOW IDLE
FUEL DELIVERY CHARACTERISTICS	+ Speed rpm : 375 + Rack travel in mm : 5.505.70 + Del.quantity cm3/ : 6.07.0
1st version	1000 s: (5.510.0) Spread cm3 : 1.00
Aneroid pressure h: 1100 Speed rpm : 1400	1000 s: (1.50)
Del.quantity cm3/: 36.538.1 1000 s: (35.539.1) Spread cm3 : 2.50	SETTING PNUEUMATIC FAST IDLE (ELA)
1000 s: (3.0) Aneroid pressure h: 1100	T + Speed rpm : 425
The star proportion in these	I obeca ibii . 157

Rack travel in mm : 7.00...8.60

Del.quantity cm3/: - 1000 s: --

hPa : 400 Vacuum

Remarks:

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar. control rod must move quickly to control-rod travel = 0 mm

* Setting point for negative torque control - negative retainer behind sliding sleeve

** Reference measurement: Control-rod travel and delivery too large - position spiral spring downwards Control-rod travel and delivery too small - position spiral spring upwards

Start-of-delivery sensor system: adjustment and blocking with device $KDEP 1077 = 15.3^{\circ}...15.7^{\circ}$ (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

Test sheet

: MB

Edition Replaces : 09.05.94

Test oil

: 18.12.92 : ISO-4113

Combination no.

: 0 400 074 904

Injection pump

Pump designation : PES4M55C32ORS169

EP type number : 0 410 054 959

Governor

Governor design: : RSF375/2300M56-6

Governer no.

: 0 420 021 110

Cust. part no. : 18

Customer-spec. information

Customer

: MB-PKW

Engine

: 0M601-ECE

1st version kW

: 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly

: 1 688 901 111

Openina

pressure, bar

: 147...150

Test lines

: 1 680 750 014

Cutside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-3-4-2

Phasing

: 0-90-180-270

Tolerance + - °

: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rum: 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.3...3.4

100 s: (3.2...3.5)

Spread

cm3 : 0.2

100 s: (0.3)

rpm : 375.0 2nd speed Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 0.6...0.7

100 s: (0.5...1.0)

Spread

cm3 : 0.1 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1100

: 33.0...34.0

Del.quantity

1000 : (32.0...35.0)

cm3

: 2.50

1000 : (3.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500 4th rack travel in: 2950

rpm : 0.00...1.00 Speed

SET IDLE CONTROL LEVER

POSITION

rom

: 1000

Rack travel in mm: 1.2...1.3

LOW IDLE 1

Control lever

Setting point w/out bumper spring nom : 375 Rack travel in mm: 6.5 Testina: rpm : 250 Speed Minimum rack trave: 11.00 Speed rpm : 375
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00 rpm : 660...760 Speed : 1000 Speed mqn: Maximum rack trave: 1.30 SET IDLE AUXILIARY SPRING rpm : 400 Speed Rack travel in mm: 5.3...5.5 : (5.2...5.6) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.30...12.40 2nd speed rpm : 1800 Rack travel in m: 11.70...11.90 3rd speed rpm : 2300 Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test 1st version hPa : 950 Pressure Rack travel mm : 0.00...0.20 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1800

Del.quantity cm3/: 33.0...34.5

1000 s: (32.0...35.5)

Spread cm3 : 2.50

1000 s: (3.0) Aneroid pressure h: 1100 Speed rpm : 2300 Del.quantity cm3/: 34.0...36.0 1000 s: (33.0...37.0) cm3 : 2.50Spread 1000 s: (3.00)

position degrees: 12...16

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0

1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00

HIGH TOLF

1st version

Aneroid pressure h: 1100 : 2500 Speed rpm -

Rack travel in mm: 8.50...3.90 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0)

cm3 : 2.50Spread

1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.40...6.60 Del.quantity cm3/ : 6.0...7.0 1000 s: (5.5...10.0)

cm3 : 1.00 Spread 1000 s: (1.50)

SETTING PNUEUMATIC FAST IDLE (ELA)

Speed rpm : 425 Rack travel in mm : (8.1...9.7)

Del.quantity cm3/: -1000 s: -Vacuum hPa : 400

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: MB 2,3 B Test sheet : 09.05.94 Edition : 28,05,90 Replaces Test oil : ISO-4113

Combination no. : 0 400 074 905

Injection pump

Pump designation : PES4M55C32ORS167 EP type number : 0 410 054 960

Governor

Governor design: : RSF375/1900M69-1 : 0 420 021 102 Governer no.

Customer-spec. information Custome/r : MB-NF7

: 0M601-2.31Engine

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina .

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 : (1.95...2.15) Prestroke mm

Rack travel in mm : 20.00...22.00

Firing order : 1-3-4-2 Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 4.0...4.1

100 s: (3.9...4.2)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 375.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 40.0...41.0

1000 : (39.0...42.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0 3rd rack travel in: 7,0...7,5

rpm : 2100 Speed 4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000 Rack travel in mm: 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 11...15

Setting point w/out bumper spring

B01

Speed : 1900 וחכרו Speed rpm Rack travel in mm : 5.1 Del.quantity cm3/: 39.5...41.5 1000 s: (38.5...42.5) Testing: cm3 : 2.50 Spread 1000 s: (3.00) Aneroid pressure h: 1100 Speed : 250 rom Minimum rack trave: 10.20 speed rpm : 375
Rack travel in mm : 5.00...5.20
Rack travel in mm : 3.00
Speed Speed rpm : 500 * Del.quantity cm3/ : 34.5...36.0 1000 s: (33.5...37.0) * rpm : 480...580 Spread cm3 : 2.50Speed : 1000 1000 s: (3.00) rpm Maximum rack trave: 1.50 Aneroid pressure h: 1100 Speed rpm : 800** Del.quantity cm3/: 37.5...39.0 ** SET IDLE AUXILIARY SPRING 1000 s: (36.5...40.0)** rpm : 420 Speed Rack travel in mm: 3,9...4,1 Spread cm3 : 2.50: (3,8...4,2) 1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 1000 Rack travel in m: 12.80...12.90 nd speed rpm : 1400 Rack travel in m: 12.20...12.50 Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 2nd speed 3rd speed rpm : 1900 1000 s: (52.0...0.0) Rack travel in m: 11.40...11.70 Rack travel in mm : 20.10...0.00 rpm : 500 * 4th speed Rack travel in m: 12.00...12.30 * HIGH IDLE 5th speed rpm : 800** Rack travel in m: 12.40...12.70** 1st version Aneroid pressure h: 1100 Aneroid/Altitude rpm : 2100 Speed Rack travel in mm : 7.00...7.50

Del.quantity cm3/ : 22.0...26.0

1000 s: (21.0...27.0)

Spread cm3 : 2.50 Compensator Test 1st version Setting 1000 s: (3.00) Speed rom : 1000 Pressure hPa : 950 LOW IDLE Rack travel mm : 0.00...0.20 Speed rpm : 375 Rack travel in mm : 5.00...5.20 Measurement Del.quantity cn3/: 5.0...6.0 1000 s: (4.5...9.0) 1/min: 1000 Speed 1st pressure hPa : 900 cm3 : 1.00 Spread Rack travel in m: 0.50...0.70 1000 s: (1.50) 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 SETTING PNUEUMATIC FAST IDLE (ELA) FUEL DELIVERY CHARACTERISTICS : 425 Speed rpm Rack travel in mm : (6,6...8,2) 1st version Del.quantity cm3/:-Aneroid pressure h: 1100 rpm : 1400 Speed 1000 s: (11,5...19,5) Del.quantity cm3/: 39.5...41.0 Vacuum hPa : 400 1000 s: (38.5...42.0) Spread cm3 : 2.50 Remarks: 1000 s: (3.0) Aneroid pressure h: 1100

Pin projection = 16.60...16.70 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

* Setting point for regative torque control - negative retainer behind sliding sleeve

** Reference measurement:
Control-rod travel and delivery too
large - position spiral spring
downwards
Control-rod travel and delivery too
small - position spiral spring upwards

Note remarks

Test sheet

: MB

Edition

: 18.04.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 075 922

Injection pump

EP type number

Pump designation : PES5M55C320R\$168

Governor

: 0 410 055 978

Governor design. : RSF350/2000M56-15

Governer no.

: 0 420 021 272

Customer-spec. information Customer

: MB-PKW

Engine

: 0M602 - 2.9L

1st version kW

: 68.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder

pressure, bar

: 1 688 901 111 assembly

Openina

: 147...150

Test Lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 2.00...2.10

Rack travel in mm : 20.00...22.00

Firing order

B04

: (1.95...2.15)

: 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rom: 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 3.8...3.9

100 s: (3.7...4.0)

Spread

cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4

Del.quantity cm3/: 0.6...0.7

100 s: (0.5...1.0)

cm3 : 0.1100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed

rpm : 1000

Del.quantity

: 38.0...39.0 1000 : (37.0...40.0)

Spread

cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.65...9.15 rpm : 2200

Speed 4th rack travel in: 2550

Speed

: 0.00...1.00 rpm

SET IDLE CONTROL LEVER POSITION

rpm

: 1000

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12.0...16.0

Setting point w/out bumper spring

rpm : 350 Speed

Rack travel in mm: 5.3 Testina: Speed rpm Minimum rack trave: 9.20 rpm : 350 Rack travel in mm : 5.20...5.40 Speed : 1400 rpm SET IDLE AUXILIARY SPRING rpm : 450 Speed Rack travel in mm : 4.00...4.20 : (3.90...4.30) TURQUE CONTROL Tarque control curve – 1st version st speed rpm : 1000 Rack travel in m: 12.10...12.20 1st speed : 1800 2nd speed rpm Rack travel in m: 11.90...12.10 3rd speed rpm : 2000 Rack travel in m: 11.70...11.90 Aneroid/Altitude Compensator Test 1st version Settina Speed : 1000 mqn Pressure hPa : 940 Rack travel mm : 0.00...0.20 Speed 1/min: 1000 1st pressure hPa 💈 900 Rack travel in m: 0.30...0.50 2nd pressure hPa : 750 Rack travel in m: 1.40...1.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1800 Del.quantity cm3/: 40.0...41.6 1000 s: (39.0...42.6) cm3 : 2.50 Spread 1000 s: (3.0) : 2000 Speed rpm Del.quantity cm3/: 40.0...42.0

Maximum rack trave: 1.45 Measurement 1000 s: (39.0...43.0) cm3 : 2.50 Spread 1000 s: (3.00) STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 54.0...0.0 1000 s: (54.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version : 2200 Speed rpm Del.quantity cm3/: 29.0...33.0 1000 s: (28.0...34.0) : 2.50 Spread cm3 1000 s: (3.00) LOW IDLE Speed rpm : 350 Rack travel in mm : 5.20...5.40 Del.quantity cm3/ : 6.0...7.0 1000 s: (5.5...10.0) cm3 : 1.00 Spread 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) rpm : 400 Speed Rack travel in mm : 5.30...6.90
Del.quantity cm3/ : 7.00...15.00
1000 s: hPa : 400 Vacuum Remarks:

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Note remarks

Test sheet : MB

: 18.04.94 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 075 925

Injection pump

Pump designation : PES5M55C320RS201 EP type number : 0 410 055 972

Governor

Governor design. : RSF350/2500M56-13

: 0 420 021 171 Governer no.

Customer-spec. information

Customer : MB-PKW

: 0M605 Engine

1st version kW : 83.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3

: 0-72-144-216-288 Phasing

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1400

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 3.65...3.75

100 s: (3.55...3.85)

Spread cm3 : 0.25

100 s: (0.3)

rpm : 350.0 2nd speed

Rack travel in mm: 7.3...7.5 Del.quantity cm3/: 0.8...0.9

100 s: (0.75...1.15)

cm3 : 0.1 Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm: : 1400 Speed Aneroid pressure h: 1100

: 36.5...37.5 Del.quantity

1000 : (35.5...38.5)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7.00...7.60

rpm : 2700 Speed

4th rack travel in: 3150

Speed : 0.00...1.00 rpm

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000 Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring

B07

Speed rpm : 350 Rack travel in mm : 7.4 Testing: Speed rpm : 250 Minimum rack trave: 10.0 : 350 rpm Rack travel in mm : 7.30...7.50 Rack travel in mm : 3.00 rpm : 650...750 Speed Speed rpm : 1400 Maximum rack trave: 1.95 SET IDLE AUXILIARY SPRING Speed rpm : 475 Rack travel in mm : 5.30...5.50 : (5.20...5.60) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 12.70...12.80 2nd speed rpm : 2300 Rack travel in m: 12.05...12.35 3rd speed rpm : 2500 Rack travel in m: 11.65...11.95 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 1400 Pressure hPa : 940 Rack travel mm : 0.00...0.20 Measurement Speed 1/min: 1400 1st pressure hPa : 900 Rack travel in m: 0.30...0.50 2nd pressure hPa : 750 Rack travel in m: 1.40...1.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 2300
Del.quantity cm3/: 38.5...40.1
1000 s: (37.5...41.1)
Spread cm3 : 2.50
1000 s: (3.0) Aneroid pressure h: 1100

Spread cm3 : 2.50 1000 s: (3.00) STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 50.0...0.0 1000 s: (50.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Aneroid pressure h: 1100 Speed rpm : 2700 Del.quantity cm3/: 11.0...15.0 1000 s: (10.0...16.0) LOW IDLE Speed rom : 350 Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 8.0...9.0 1000 s: (7.5...11.5) Spread cm3 : 1.00 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) rpm : 400 Rack travel in mm : 7.80...9.20 Del.quantity cm3/: 8.00...16.00 1000 s: hPa : 400 Vacuum Remarks: Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam START-OF-DELIVERY ADJUSTMENT -Start-of delivery adjustment and lock after start-of-delivery mean value of all cylinders, 16.3...16.7° (16.2...16.8°) angular displacement of the cam after cylinder 1.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet

Edition : 18.04.94

Replaces

Test oil : ISO-4113

Combination no. : 0 400 075 926

Injection pump

Pump designation : PESSM55C32URS2U1

EP type number : 0 410 055 972

Governor

Governor design. : RSF350/2500M75-3

: 0 420 021 173 Governer no.

Customer-spec. information

Customer : MB-PKW

Engine : 0M605

1st version kW : 83.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

: 1- 2- 4- 5- 3 Firing order

: 0-72-144-216-288 Phasing

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 3.65...3.75

100 s: (3.55...3.85)

cm3 : 0.15Spread

100 s: (0.25)

2nd speed rpm : 350.0 Rack travel in mm : 7.3...7.5 Del.quantity cm3/ : 0.8...0.9 100 s: (0.7...1.05)

cm3 : 0.1Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400 Aneroid pressure h: 1100

: 36.5...37.5 Del.quantity

1000 : (35.5...38.5) cm3 : 2.50

Spread

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 7.00...7.60

rpm : 2700 Speed

4th rack travel in: 3150

rpm : 0.00...1.00Speed

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1400

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring

B10

Speed rpm : 350 Rack travel in mm : 7.3 Testina: Speed rpm : 250 Mirrimum rack trave: 10.0 : 350 Speed rpm Rack travel in mm : 7.30...7.50 : 1400 Speed CDM Maximum rack trave: 1.95 SET IDLE AUXILIARY SPRING rpm : 475 Speed Rack travel in mm : 5.30...5.50 : (5.20...5.60) TORQUE CONTROL Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 12.70...12.80 nd speed rpm : 2300 Rack travel in m: 12.05...12.35 2nd speed rpm : 2500 3rd speed Rack travel in m: 11.65...11.95 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1400 rpm hPa : 940 Pressure : 0.00...3.20 Rack travel mm Measurement 1/min: 1400 Speed 1st pressure hPa : 900 Rack travel in m: 0.30...0.50 2nd pressure hPa : 750 Rack travel in m: 1.40...1.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100

1st version
Aneroid pressure h: 1100
Speed rpm : 2300
Del.quantity cm3/: 38.5...40.1
1000 s: (37.5...41.1)
Spread cm3 : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2500
Del.quantity cm3/: 36.5...38.5
1000 s: (35.5...39.5)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...0.0
1000 s: (50.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1100
Speed rpm : 2700
Del.quantity cm3/: 11.0...15.0
1000 s: (10.0...16.0)

LOW IDLE

SETTING PNUEUMATIC FAST IDLE (ELA)

Speed rpm : 400 Rack travel in mm : 7.80...9.20 Del.quantity cm3/ : 8.00...16.00 1000 s: -

hPa : 400

Remarks:

Vacuum

: KARD = 1400 1/MIN : RW = 1.55...1,85 : FM = 6.5...8.5

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

START-OF-DELIVERY ADJUSTMENT
-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, 16.3...16.7°
(16.2...16.8°) argular displacement of
the cam after cylinder 1.

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 350 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet

: MB

Edition Replaces : 18.04.94

Test oil

: 27.10.92 : ISO-4113

Combination no.

: 0 400 075 930

Injection pump

Fump designation : PES5M550320RS177

EP type number : 0 410 055 974

Governor

Governor design. : RSF340/2300M74-1

Governer no.

: 0 420 021 156

Cust. part no. : T8

Customer-spec. information Customer

: MB-PKW

Engine

: DM602A-D/A (KAT)

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly

: 1 588 901 111

Opening

pressure, bar : 147...150

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

Phasina

: 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 13.70...13.80

Del.quaritity cm3/: 5.1...5.2

100 s: (5.0...5.3)

Spread

cm3 : 0.2

100 s: (0.3)

rpm : 345.0 2nd speed

Rack travel in mm: 5.5...5.7

Del.quantity cm3/: 0.6...0.7 100 s: (0.5...0.9)

Spread

cm3 : 0.1100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1850

Del.quantity

1000 : (50.7...53.7) cm3 : 2.50 1000 : (3.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8,5...8,9

rpm : 2500 Speed

4th rack travel in: 2950

Speed

rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed

rpm : 1000

Rack travel in mm: 1,7...1,8

LOW IDLE 1

Control Lever

Rack travel in m: 3.40...3.60 2nd pressure hPa : 750 position degrees: 8...12 FD<270 Setting point w/out bumper spring Speed rom Rack travel in m: 4.90...5.30 Rack travel in mm: 5.6 FUEL DELIVERY CHARACTERISTICS Testing: Speed rpm : 150 * Minimum rack trave: 10.0+1 1st version : 345 Speed rpm Aneroid pressure h: 1850 Rack travel in mm : 5.50...5.70 Speed rpm : 1600 Del.quantity cm3/: 50.0...51.5 1000 s: (49.0...52.5) Rack travel in mm: 2.50 : 550...650 Speed rom : 1000 cm3 : 2.50 Speed rpm Spread Maximum rack trave: 1.80 1000 s: (3.0) Aneroid pressure h: 1850 Speed rpm : 2200 Del.quantity cm3/ : 48.5...50.5 1000 s: (47.5...51.5) LOW IDLE 2 Control Lever position degrees: 8-12FD 270 Setting point w/out bumper spring cm3 : 2.50 Spread rpm : 345 1000 s: (3.00) Rack travel in mm: 5,6 Aneroid pressure h: 1050 : 1000 Speed rpm Del.quantity cm3/: 34.0...35.0 Testing: : 220 Speed 1000 s: (33.0...36.0) rom Rack travel in mm : MIN. 8,0 ** cm3 : 2.50Spread : 345 1000 s: (3.00) rpm Rack travel in mm: 5,5...5,7 : 580 Speed COM Rack travel in mm : 2,5 STARTING FUEL DELIVERY Speed rpm Rack travel in mm: 2,5 Speed : 100 rpm Del.quantity cm3/: 54.0...0.0 7000 s: (54.0...0.0) SET IDLE AUXILIARY SPRING rpm : 400 Rack travel in mm: 4,7-4,9FD270 Rack travel in mm : 20.10...0.00 : 4,2-4,4 FD<270 HIGH IDLE TORQUE CONTROL Torque control curve - 1st version 1st version 1st speed rpm : 1000 Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.50...8.90 Rack travel in m: 13.70...13.80 2nd speed rpm : 1600 Del.quantity cm3/: 30.0...34.0 1000 s: (29.0...35.0) Spread cm3 : 2.50 1000 s: (3.00) Rack travel in m: 13.00...13.20 3rd speed rpm : 2200 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test LOW IDLE Speed : 345 rpm Rack travel in mm : 5.50...5.70 1st version Setting Del.quantity cm3/: 6.0...7.0 Speed rom : 1000 1000 s: (5.0...9.5) Pressure hPa : 1600 Spread cm3 : 1.00 Rack travel mm : 0.30...0.70 1000 s: (1.50) SETTING/TESTING ELECTRONIC IDLE Measurement 1/min: 1000 Speed REGULATION (ELR)

1st pressure hPa : 1050

Control lever at idle stop

Speed rpm : 370

Rack travel in mm : (11,8...13,3)

Del.quantity cm3/: -1000 s: (38,0...46,0)

Current A

Control lever at full-load stop

2950 rpm Rack travel in mm: 0,0...1,0

Current

short-duration A: 3,0

Starting test

Speed rom : 100 Del.quantity cm3/: -min. 1000 s: 54,0

1,8A

Remarks:

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD) Control lever on full-load stop. At n = 1000 min -Control-lever position 42,0°, I = 2.5 A, difference in delivery referenced to delivery (5.6...7.6) ccm/1000 strokes.

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Sliding sleeve pre-travel = 6.25 mm

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400 Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.457...2.517 (2.427...2.547) V must be displayed

on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21,5...22,5 (20,5...23,5) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V isindicated. Tighten fastening screws with 1...2 Nm. Control lever to fullload stop; voltage value of 2.457... 2.517 V must be attained.

* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 44,5° max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Note remarks

: MB 2.5 C3 : 18.04.94 Test sheet Edition : 15.10.91 Replaces Test oil : ISO-4113

Combination no. : 0 400 075 938

Injection pump

Pump designation : PES5M55C32ORS170 EP type number : 0 410 055 977

Governor

Governor design. : RSF350/2300M71-3 : 0 420 021 136 Governer no.

Customer-spec. information Customer : MB-PKW

: 0M602-ECE MJ90 Engine

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...173

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 : 1-2-4-5-3 Firing order

: 0-72-144-216-288 Phasing

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed mpm: 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 350.0 2nd speed

Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 0.5...0.6

100 s: (0.45...0.9)

cm3 : 0.1 Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1000 Aneroid pressure h: 1100

: 32.0...33.0 Del.quantity

1000 : (31.0...34.0)

cm3 Spread : 2.50

1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0 3rd rack travel in: 8.5...8.9

Speed : 2500 MOM

4th rack travel in: 2950

Speed : 0.00...1.00 rpm

SET IDLE CONTROL LEVER POSITION

rpm : 1000 Speed Rack travel in mm: 1.2...1.3

LOW IDLE 1

Control lever

position degrees: 12..16 FD<270 Setting point w/out bumper spring

B16

Speed mon : 350 FUEL DELIVERY CHARACTERISTICS Rack travel in mm: 6.6 Testina: 1st version rpm : 150 * Speed Aneroid pressure h: 1100 Minimum rack trave: 10.0+1 Speed : 1800 rpm Speed rpm : 350 Del.quantity cm3/: 34.0...35.5 Rack travel in mm : 6.50...6.70 1000 s: (33.0...36.5) Rack travel in mm: 2.00 Spread cm3 : 2.50 Speed : 670...770 1000 s: (3.0) rom Aneroid pressure h: 1100 Speed riom : 1000 Speed rpm : 2200
Del.quantity cm3/ : 34.0...36.0
1000 s: (33.0...37.0)
Spread cm3 : 2.50 Maximum rack trave: 1.30 LOW IDLE 2 Control Lever position degrees: 12-16FD270 1000 s: (3.00) Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 6.6 STARTING FUEL DELIVERY Testina: rpm : 220 Speed rpm : 100 Del.quantity cm3/: 52.0...0.0 Speed Rack travel in mm : MIN.10.0 ** Speed rpm : 670 1000 s: (52.0...0.0) Rack travel in mm: 2.0 Rack travel in mm : 20.10...0.00 Speed COM Rack travel in mm: 2.0 HIGH IDLE SET IDLE AUXILIARY SPRING 1st version Speed rpm : 400 Aneroid pressure h: 1100 rpm : 2500 Rack travel in mm : 5.40...5.60 Speed : (5.30...5.70) Rack travel in mm : 8.50...8.90 Del. quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.50 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.30...12.40 1000 s: (3.00) 2nd speed rpm : 1800 LOW IDLE Rack travel in m: 11.70...11.90 3rd speed rpm : 2200 rpm : 350 Speed Rack travel in m: 11.40...11.60 Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) Aneroid/Altitude cm3 : 1.00 Compensator Test Spread 1000 s: (1.50) 1st version SETTING PNUEUMATIC FAST IDLE Settina (ELA) Speed rpm : 1000 hPa : 950 Pressure Speed rpm : 400 Rack travel in mm : (6.8...8.4) Rack travel mm : 0.00...0.20 Del.quantity cm3/: -1000 s: (6.0...14.0) Measurement Speed 1/min: 1000 Vacuum hPa : 400 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 Remarks: 2nd pressure hPa : 750 : Rack travel in m: 1.80...2.20 CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNELMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) argular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)
Control lever on full-load stop. At n = 1000 min. -1 , I = 2.5 A, difference in delivery referenced to full-load delivery (6.3...8.3) ccm/1000 strokes.

Sliding sleeve pre-travel = 6.25 mm
* Sliding sleeve pre-travel = 5.2 mm
Engine with two-mass flywheel

Note remarks

Test sheet : ME

Edition : 20.04.94

Replaces :

Test oil : ISO-4113

Combination no. : 0 400 075 939

Injection pump

Pump designation : PES5M55C320RS173

EP type number : 0 410 055 976

Governor

Governor design. : RSF350/2300M71-2

Governer no. : 0 420 021 135

Customer spec. information

Customer : MB-PKW

Engine : 0M602-Abgl, MJ90

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 1 688 901 111

Opening

pressure, bar : 147...150

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 3.25...3.35

100 s: (3.15...3.45)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 0.6...0.7

100 s: (0.5...1.0) pread cm3 : 0.1

Spread cin3 : 0.1 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.90...9.30

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 9.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm: 1000

Rack travel in mm: 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12..16 FD 270

Setting point w/out bumper spring

B19

Speed Rack travel in m: 1.80...2.20 TO THE Rack travel in mm: 6.5 FUEL DELIWERY CHARACTERISTICS Testina: Speed rpm : 220** Minimum rack trave: 10.00 1st version : 350 rpm Speed Aneroid pressure h: 1100 : 1800 Rack travel in mm : 6.40...6.60 Speed rpm Rack travel in mm : 2.50 Del.quantity cm3/: 34.5...36.1 : 620...720 Speed rom 1000 s: (33.5...37.1) : 1000 Speed cm3 : 2.50 rom Spread Maximum rack trave: 1.50 1000 s: (3.9) Aneroid pressure h: 1100 LOW IDLE 2 : 2200 Speed rpm Control lever Del.quantity cm3/: 34.0...36.0 1000 s: (33.0...37.0) position degrees: 12-16 <270 Setting point w/out bumper spring Spread cm3 : 2.50 rpm : 350 1000 s: (3.00) Rack travel in mm : 6.4 Testina: STARTING FUEL DELIVERY Speed rpm : 150*
Rack travel in mm : 11+1 < FD270 Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0) rpm : 350 Speed Rack travel in mm: 6.4...6.6 Speed rpm : 670 Rack travel in mm: 2.5 Rack travel in mm : 20.10...0.00 : 1000 rpm Rack travel in mm: MAX.1.5 HIGH IDLE SET IDLE AUXILIARY SPRING 1st version : 400 Speed riom Aneroid pressure h: 1100 Rack travel in mm : 5.2...5.4 Speed rpm : 2500 Rack travel in mm : 8.90...9.30 : (5.1...5.5) Del.quantity cm3/: 22.0...26.0 TORQUE CONTROL 1000 s: (21.0...27.0) cm3 : 2.50 Torque control curve - 1st version Spread 1st speed rpm : 1000 1000 s: (3.00) Rack travel in m: 12.40...12.50 2nd speed rpm : 1800 LOW IDLE Rack travel in m: 11.80...12.00 3rd speed rpm : 2200 Rack travel in m: 11.50...11.70 rpm : 350 Speed Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...7.0 Aneroid/Altitude 1000 s: (5.5...10.0) Compensator Test Spread cm3 : 1.001000 s: (1.50) 1st version SETTING PNUEUMATIC FAST IDLE Setting (ELA) Speed rpm : 1000 hPa : 950 Pressure : 0.00...0.20 Rack travel mm Speed rpm : 400 Rack travel in mm : 7.40...7.80 Del.quantity cm3/: 9.0...12.0 1000 s: -Measurement Speed 1/min: 1000 Vacuum hPa : 400 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Remarks: :

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)
Control lever on full-load stop. At n = 1000 min. -1 , I = 2.5 A, difference in delivery referenced to full-load delivery (6.3...8.3) ccm/1000 strokes.

CHECKING THE PNEUMATIC SHUTOFF BOX —Control lever up against idle stop. At n = 350 1/min and pu = 450 mbar control rod must move briskly to control—rod travel = 0 mm

Sliding sleeve pre-travel = 6.25 mm

* Sliding sleeve pre-travel = 5.2 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.
0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Engine with two-mass flywheel

Note remarks

Test sheet : MB 2.5 C5 Edition : 20.04.94 : 15.04.91 Replaces Test oil : ISO-4113

Combination no. : 0 400 075 940

Injection pump

Pump designation : PES5M55C320RS173 EP type number : 0 410 055 976

Governor

Governor design. : RSF340/2300M60-26 : 0 420 021 133 Governer no.

Customer-spec. information Customer : MB-PKW

Engine : 0M602-Abal, MJ90

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Coening

pressure, bar : 147...150

Test Lines : 1 680 750 614

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 12.40...12.50

Del.quantity cm3/: 3.25...3.35

100 s: (3.15...3.45)

cm3 : 0.25Spread

100 s: (0.3)

2nd speed rom : 315.0 Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1100

: 32.5...33.5 Del.quantity

1000 : (31.5...34.5) cm3 : 2.50 Spread

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0 3rd rack travel in: 8.9...9.3

Speed rpm : 2500 4th rack travel in: 2950

rpm : 0.00...1.00 Speed

SET IDLE CONTROL LEVER POSITION

: 1000 Speed rom Rack travel in mm: 1.4...1.5

LOW IDLE 1 Control lever

position degrees: 12...16

Setting point w/out bumper spring

B22

Speed rpm : 315 Rack travel in mm : 6.5 cm3 : 2.50 1000 s: (3.00) Spread Testing: Speed : 220 STARTING FUEL DELIVERY nom Minimum rack trave: 8.00 : 315 COM Rack travel in mm : 6.40...6.60 Speed : 100 rpm Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm: 2.50 Speed : 600...700 nom. Rack travel in mm : 20.10...0.00 Speed : 1000 rpm Maximum rack trave: 1.50 HIGH IDLE SET IDLE AUXILIARY SPRING Speed : 380 וחסרו 1st version Rack travel in mm: 5.2...5.4 Aneroid pressure h: 1100 : (5.1...5.5) Speed rpm : 2500 Rack travel in mm : 8.90...9.30 TORQUE CONTROL Del.quantity cm3/: 22.0...26.0 Torque control curve - 1st version 1000 s: (21.0...27.0) : 1000 1st speed rom Spread cm3 : 2.50Rack travel in m: 12.40...12.50 1000 s: (3,00) 2rid speed rom : 1800 Rack travel in m: 11.80...12.00 LOW IDLE rpm : 2200 3rd speed Rack travel in m: 11.50...11.70 Speed rpm : 315 Rack travel in mm : 6.40...6.60 Aneroid/Altitude Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0) Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE : 1000 Speed MC REGULATION (ELR) Pressure hPa : 950 Rack travel mm : 0.00...0.20 Control lever at idle stop Rack travel in mm: 13.0...14.4
Del.quantity cm3/: 30.0...38.0
1000 s: Current A Measurement Speed 1/min: 1000 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 Control lever at full-load stop Speed : 2950 rpm -FUEL DELIVERY CHARACTERISTICS Rack travel in mm: 0.0...1.0 Current short-duration A: 3.0 1st version Starting test Arieroid pressure h: 1100 Speed riom Del.quantity cm3/: - min. 1000 s: -: 1800 Speed mari Del.quantity cm3/: 34.5...36.1 1000 s: (33.5...37.1) Spread cm3 : 2.50 1.8A Remarks: 1000 s: (3.0) Aneroid pressure h: 1100 Start-of-delivery sensor system: Speed rpm : 2200 Del.quantity cm3/: 34.0...36.0 adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of 1000 s: (33.0...37.0) cam following start of delivery of

cytinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet : MB 2.5 C8 Edition : 20.04.94 Replaces : 15.04.91 Test oil : ISO-4113

Combination no. : 0 400 075 941

Injection pump

Pump designation : PES5M55C32ORS173 EP type number : D 410 055 976

Governor

Governor design. : RSF350/2300M56-11 : 0 420 021 131 Governer no.

Customer-spec. information Customer : MB-PKW

Engine : 0M602-Abal, MJ90

1st version kw : 64.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 1 688 901 111

Opening

pressure, bar : 147...150

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85) Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3 Phasing : 0-72-144-216-288

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 ist speed

Rack travel in mm: 12.40...12.50

Del.quantity cm3/: 3.25...3.35

100 s: (3.15...3.45)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

: 32.5...33.5 Del.quantity 1000 : (31.5...34.5) cm3 : 2.50 1000 : (3.00)

RATED SPEED

Spread

1st version

Control Lever

position degrees: 50...0 3rd rack travel in: 8.9...9.3 rpm : 2500 Speed

4th rack travel in: 2950

: 0.00...1.00 Speed וויםיו

SET IDLE CONTROL LEVER

POSITION

Speed : 1000 rpm Rack travel in mm: 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 6.5 Testina: Speed rpm : 220 Minimum rack trave: 10.00 Speed rpm : 350 Rack travel in mm: 6.40...6.60
Rack travel in mm: 2.50
Speed rpm: 620...720 Speed rpm : 1000 Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm: 5.2...5.4 : (5.1...5.5) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 3rd speed rpm : 2200 Rack travel in m: 11.50...11.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1000 תוכרו hPa : 950 Pressure : 0.00...0.20 Rack travel mm Measurement Speed 1/min : 1000 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm: 1800 Del.quantity cm3/: 34.5...36.1 1000 s: (33.5...37.1) cm3 : 2.50 Spread 1000 s: (3.0) Aneroid pressure h: 1100 Speed rpm_ : 2200 Del.quantity cm3/: 34.0...36.0 1000 s: (33.0...37.0)

Spread cm3 : 2.50 1000 s: (3.00) STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Aneroid pressure h: 1100 Speed rpm : 2500 Rack travel in mm : 8.90...9.30 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.50 1000 s: (3.00) LOW IDLE Speed rpm : 350 Rack travel in mm : 6.40...6.60 Del.quantity cm3/ : 6.0...7.0 1000 s: (5.5...10.0) cm3 : 1.00Spread 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) Speed rpm : 400 Rack travel in mm : 6.7...8.1 Del.quantity cm3/: 7.5...13.5 1000 s: hPa : 400 Vacuum Remarks: Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At n = 350 1/min and pu = 450 mbar

control rod must move briskly to

control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet : MB 2.5 C9 Edition : 27.04.94 : 13.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 075 942

Injection pump

Pump designation : PES5M55c320Rs158-1 EP type number : 0 410 055 979

Governor

Governor design. : RSF340/2300M73 Governer no. : 0 420 021 129

Customer-spec. information Customer : MB-PKW

Engine : OM602A-ECE

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 1 688 901 111

Opening

pressure, bar : 147...150

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

828

Phasing : 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 5.25...5.35

100 s: (5.15...5.45)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 345.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

cm3 : 0.1 Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

Del.quantity : 52.5...53.5

1000 : (51.5...54.5)

: 2.50 Spread cm3 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8.1...8.5

: 2500 Speed rpm 4th rack travel in: 2950

Speed : 0.00...1.00 r/om

SET IDLE CONTROL LEVER POSITION

: 1000 rpm Rack travel in mm: 1.7...1.8

LOW IDLE 1

Control Lever

position degrees: 8...12 FD 270 Setting point w/out bumper spring

Rack travel in mm: 5.3 Testing: Speed rpm: 220** Minimum rack trave: 8.00 Speed rpm: 345 Rack travel in mm: 5.205.40 Rack travel in mm: 2.50 Speed rpm: 560660 Speed rpm: 1000 Maximum rack trave: 1.80 LOW IDLE 2 Control lever position degrees: 812 Setting point w/out bumper spring Speed rpm: 345 Rack travel in mm: 5.3	Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/ : 51.052.5
Testing: Speed rpm : 150* Rack travel in mm : 10+1 FD<270 Speed rpm : 345 Rack travel in mm : 5.25.4 Speed rpm : 670 Rack travel in mm : 2.5 Speed rpm : 1000 Rack travel in mm : 1.71.8 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.1013.30 3rd speed rpm : 2200 Rack travel in m: 12.3012.50	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/ : 29.033.0
Aneroid/Altitude Compensator Test 1st version	1000 s: (1.50) SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
Setting Speed rpm: 1000 Pressure hPa: 1600 Rack travel mm: 0.450.85 Measurement Speed 1/min: 1000	Control lever at idle stop Speed rpm : 345 Rack travel in mm : 11.413.4 Del.quantity cm3/ : 39.047.0 1000 s: - Current A : 1.8
1st pressure hPa : 1100 Rack travel in m: 3.553.75 2nd pressure hPa : 750 Rack travel in m: 5.405.80 FUEL DELIVERY CHARACTERISTICS	Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0.01.0 Current short-duration A : 3.0 Starting test
1	Speed rpm : 100

Del.quantity cm3/: min. 1000 s: - 1.8 A

Remarks:

: ARD

: 1000 1/MIN -6.2..6.4

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 345 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.25 mm

* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 44,5° max.
0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
—Control—lever position 42,0°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet

Edition : 19.04.94

Replaces

: ISO-4113 Test oil

: 0 400 076 953 Combination no.

Injection pump

Pump designation : PES6M55C32ORS203

EP type number : 0 410 056 982

Governor

Governor design. : RSF315/2500M70-11

Governer no. : 0 420 021 270

Customer-spec. information

Customer : MB-PKW - USA

Engine : 0M606

1st version kW : 95.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 3.75...3.85

100 s: (3.65...3.95)

Spread cm3 : 0.25

100 s: (0.30)

2nd speed rpm : 290.0 Rack travel in mm : 7.2...7.4

Del.quantity cm3/: 0.8...0.9 100 s: (0.7..1.05)

cm3 : 0.1Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1100

Del.quantity

: 37.5...38.5 1000 : (36.5...39.5) cm3 : 2.50

Spread

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.80...8.00

Speed rpm : 2700

4th rack travel in: 3150

: 0.00...1.00 Speed man

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control Lever

position degrees: 8.5...12.5

Setting point w/out bumper spring

CO3

Speed rpm : 290 Rack travel in mm : 7.3 Speed : 2500 rpm Del.quantity cm3/: 36.5...38.5 1000 s: (35.5...39.5) Spread cm3 : 2.50 Testing: Speed : 220 1000 s: (3.00) rpm -Minimum rack trave: 9.45 Aneroid pressure h: 1100 Speed rpm : 290
Rack travel in mm : 7.20...7.40
Rack travel Speed rpm : 500 *
Del.quantity cm3/: 31.5...33.1
1000 s: (30.5...34.1) Rack travel in mm : 3.00 : 625...725 Speed rpm cm3 : 2.50Spread Speed : 1100 rpm 1000 s: (3.00) Maximum rack trave: 2.00 Aneroid pressure h: 1100 Speed rpm : 900** Del.quantity cm3/: 35.5...37.1 1000 s: (34.5...38.1) SET IDLE AUXILIARY SPRING Speed : 400 **Lbu** cm3 : 2.50 Rack travel in mn : 5.90...6.10 Spread : (5.80...6.20) 1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 1100 Rack travel in m: 13.10...13.20 od speed rpm : 2000 : 100 2nd speed Speed rpm Del.quantity cm3/: 52.0...0.0 Rack travel in m: 12.25...12.55 3rd speed rpm : 2500 1000 s: (52.0...0.0) Rack travel in m: 11.75...12.05 Rack travel in mm : 20.10...0.00 4th speed rpm : 500 * Rack travel in m: 12.25...12.55 HIGH IDLE 5th speed rpm : 900** Rack travel in m: 12.85...13.15 1st version Aneroid pressure h: 1100 Aneroid/Altitude rpm : 2700 Speed Del.quantity cm3/: 14.0...18.0 1000 s: (13.0...19.0) Compensator Test Spread cm3 : 2.50 1st version 1000 s: (3.00) Setting Speed : 1100 LOW IDLE rpm Pressure hPa : 940 Rack travel mm : 0.00...0.20 Speed rpm : 290 Rack travel in mm : 7.20...7.40 Measurement Del.quantity cm3/: 8.0...9.0 1/min: 1100 Speed 1000 s: (7.0...10.5) Spread cm3 : 1.001st pressure hPa : 900 1000 s: (1.50) Rack travel in m: 0.30...0.50 2nd pressure hPa : 750 SETTING/TESTING ELECTRONIC IDLE Rack travel in m: 1.40...1.80 REGULATION (ELR) FUEL DELIVERY CHARACTERISTICS Control lever at idle stop rpm : 315 Speed 1st version Rack travel in mm : 12.4...13.8 Aneroid pressure h: 1100 Del.quantity cm3/: 30.0...38.0 : 2000 Speed rpm 1000 s: -Del.quantity cm3/: 37.5...39.1 Current A : 1.8 1000 s: (36.5...40.1) : 2.50 Control lever at full-load stop Spread cm3 1000 s: (3.0) : 3000 rom Aneroid pressure h: 1100 Rack travel in mm : 0.00...2.00

Current

short-duration A: 3.0

Starting test

Speed rpm : 100 Del.quantity cm3/ : -

min. 1000 s: - 1.8A

Remarks:

: * RW-DIFF.STUPSER : 50 AUF 40 GRAD 0.29M : N = 500 1/MIN

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control Lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

- * Setting point for negative torque control negative retainer behind sliding sleeve
- ** Reference measurement:
 Control-rod travel and delivery too
 large position spiral spring
 downwards
 Control-rod travel and delivery too
 small position spiral spring upwards

Note remarks

Test sheet

Edition

19.04.94

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 076 954

Injection pump

Pump designation : PES6M55C32ORS2O3

EP type number Governor

: 0 410 056 982

Governor design. : RSF315/2500M70-10

Governer no.

: 0 420 021 175

Customer

Customer-spec. information

: MB-PKW

Engine

: 0M606

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly

: 1 688 901 111

Opening

pressure, bar : 147...150

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-4

c06

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 3.85...3.95

100 s: (3.75...4.05)

Spread

cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 290.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/: 0.8...0.9

100 s: (0.7...1.15) cm3 : 0.1

Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1100 Del.quantity

: 38.5...39.5 1000 : (37.5...40.5)

: 2.50 cm3

1000 : (3.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

rpm : 2700 Speed

4th rack travel in: 3150

Speed : 0.00...1.00 rpm

SET IDLE CONTROL LEVER

POSITION

Speed

rpm

: 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: 8.5...12.5

Setting point w/out bumper spring

rpm : 290 Speed rpm : 2500
Del.quantity cm3/ : 38.5...40.5 Speed Rack travel in mm: 7.3 1000 s: (37.5...41.5) Testing: cm3 : 2.50 Spread 1000 s: (3.00) Speed : 220 nom Minimum rack trave: 8.50 Aneroid pressure h: 1100 : 290 rpm : 500 * rpm Speed Del.quantity cm3/: 32.5...34.1 1000 s: (31.5...35.1) Spread cm3 : 2.50 Rack travel in mm : 7.20...7.40 Rack travel in mm: 3.00 nom : 650...750 Speed 1000 s: (3.00) Speed rpm : 1100 Maximum rack trave: 2.00 Aneroid pressure h: 1100 Speed rpm : 900** Del.quantity cm3/: 37.0...38.6 1000 s: (36.0...39.6) SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 5.90...6.10 cm3 : 2.50Spread 1000 s: (3.00) : (5.80...6.20) TORQUE CONTROL Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 1100 Rack travel in m: 13.30...13.40 2nd speed rpm : 2000 rpm : 100 Speed Del.quantity cm3/: 50.0...0.0 1000 s: (50.0...0.0) Rack travel in m: 12.55...12.85 3rd speed rpm : 2500 Rack travel in m: 11.95...12.25 Rack travel in mm : 20.10...0.00 4th speed rpm : 500 * Rack travel in m: 12.35...12.65 HIGH IDLE 5th speed rpm : 900** Rack travel in m: 12.95...13.25 1st version Aneroid pressure h: 1100 Aneroid/Altitude rpm : 2700 Del.quantity cm3/: 18.0...22.0 1000 s: (17.0...23.0) Spread cm3 : 2.50 1000 s: (3.00) Compensator Test 1st version Setting Speed rpm : 1100 LOW IDLE Pressure hPa : 940 Speed rpm : 290 Rack travel in mm : 7.20...7.40 Rack travel mm : 0.00...0.20 Measurement Del.quantity cm3/: 8.0...9.0 1000 s: (7.5...11.5) 1/min: 1100 Speed cm3 : 1.00 Spread 1st pressure hPa : 900 1000 s: (1.50) Rack travel in m: 0.30...0.50 2nd pressure hPa : 750 SETTING/TESTING ELECTRONIC IDLE Rack travel in m: 1.40...1.80 REGULATION (ELR) FUEL DELIVERY CHARACTERISTICS Control lever at idle stop Speed rpm : 315 Rack travel in mm : 12.4...13.8 1st version Del.quantity cm3/: 30.0...38.0 1000 s: -Aneroid pressure h: 1100 rpm : 2000 Del.quantity cm3/: 39.5...41.1 Current A : 1.8 1000 s: (38.5...42.1) Spread cm3 : 2.50 Control lever at full-load stop 1000 s: (3.0) : 3000 Speed rpm Aneroid pressure h: 1100 Rack travel in mm : 0.00...2.00

Current

short-duration A: 3.0

Starting test

rpm : 100 Speed

Del.quantity cm3/: -min. 1000 s: - 1.8 A min.

Remarks:

: RW-DIFF. STUPSER : 50 AUF 40 GRAD 0.2MM : BEI $N = 500 \, 1/\text{MIN}$

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

- * Setting point for negative torque control - negative retainer behind sliding sleeve
- ** Reference measurement: Control-rod travel and delivery too large - position spiral spring downwards Control-rod travel and delivery too small - position spiral spring upwards

Note remarks

Test sheet

: 19.04.94 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 076 955

Injection pump

Pump designation : PES6M55C32ORS203 EP type number : 0 410 056 982

Governor

Governor design. : RSF315/2500M76

: 0 420 021 174 Governer no.

Customer-spec, information

Customer : MB-PKW

Engine : 04606

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 588 901 111 assembly

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

: 1-5-3-6-2-4 firing order

CO9

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 3.85...3.95

100 s: (3.75...4.05)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 0.8...0.9

100 s: (0.7...1.05) Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1100

Del.quantity

: 38.5...39.5 1000 : (37.5...40.5)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

rpm : 2700 Speed

4th rack travel in: 3150

rpm : 0.00...1.00 Speed

SET IDLE CONTROL LEVER

POSITION

Speed : 1000 **TDM**

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: 8.5...12.5

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.3 Del.quantity cm3/: 38.5...40.5 1000 s: (37.5...41.5) Spread cm3 : 2.50 Testing: 1000 s: (3.00) Speed : 220 Aneroid pressure h: 1100 (DIII) Speed rpm : 500 *
Del.quantity cm3/ : 32.5...34.1
1000 s: (31.5...35.1) Minimum rack trave: 8.50 : 300 Speed MC Rack travel in mm : 7.20...7.40 : 1100 rpm Spread cm3 : 2.50Maximum rack trave: 2.00 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm: 900**
Del.quantity cm3/: 37.0...38.6
1000 s: (36.0...39.6) SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 5.90...6.10 : (5.80...6.20) cm3 : 2.50Spread 1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed STARTING FUEL DELIVERY Rack travel in m: 13.30...13.40 : 2000 2nd speed COM Rack travel in m: 12.55...12.85 Speed : 100 rpm Del.quantity cm3/: 50.0...0.0 3rd speed rpm : 2500 1000 s: (50.0...0.0) Rack travel in mm: 20.10...0.00 Rack travel in m: 11.95...12.25 4th speed rpm : 500 *
Rack travel in m: 12.35...12.65 5th speed rpm : 900** HIGH IDLE Rack travel in m: 12.95...13.25 1st version Aneroid/Altitude Aneroid pressure h: 1100 Compensator Test Speed rpm : 2700 Rack travel in mm: 8.50...8.90 Del.quantity cm3/: 18.0...22.0 1000 s: (17.0...23.0) 1st version Setting cm3 : 2.50Spread 1000 s: (3.00) Speed : 1100 rpm hPa : 940 Pressure : 0.00...0.20 LOW IDLE Rack travel mm Measurement Speed : 300 rpm Speed 1/min: 1100 Rack travel in mm : 7.20...7.40 Del.quantity cm3/: 8.0...9.0 1st pressure hPa : 900 1000 s: (7.0...10.5) Rack travel in m: 0.30...0.50 cm3 : 1.00Spread 2nd pressure hPa : 750 1000 s: (1.50) Rack travel in m: 1.40...1.80 SETTING/TESTING ELECTRONIC IDLE FUEL DELIVERY CHARACTERISTICS REGULATION (ELR) 1st version Control lever at idle stop Aneroid pressure h: 1100 rpm : 315 Speed Speed rpm : 2000 Del.quantity cm3/ : 35.5...41.1 Rack travel in mm : 12.4...13.8 Del.quantity cm3/: 30.00...38.0 1000 s: -1000 s: (38.5...42.1) cm3 : 2.50Spread Current A 1000 s: (3.0) Aneroid pressure h: 1100 Control lever at full-load stop Speed : 2500 rpm Speed : 3000 rpm Rack travel in mm: 0.0....2.0

Current

short-duration A: 3.0

Starting test

Speed rpm : 100 Del.quantity cm3/:-

min. 1000 s: - 1.8A

TESTING & SETTING RACK TRAVEL SENSOR

Control lever at full load stop

Speed rpm : ARD

Rack travel in mm : 1.50...1.90 MM Voltage volt : FM = -7.0..-9.0

volt : N = 1100 1/MIN

Remarks:

: RW-DIFF.STUPSER : 50 AUF 40 GRAD 0.2MM

: N = 500 1/MIN

TESTING PNEUMATIC SHUTOFF DEVICE
—Control lever at idle stop.
With n = 300 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

* Setting point for negative torque control — negative retainer behind sliding sleeve

** Reference measurement:
Control-rod travel and delivery too
large - position spiral spring
downwards
Control-rod travel and delivery too
small - position spiral spring upwards

START-OF-DELIVERY ADJUSTMENT
-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, 16.3...16.7°
(16.2...16.8°) angular displacement of
the cam after cylinder 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

Test sheet

Edition : 20.04.94

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 076 956

Injection pump

Pump designation : PES6M55C32DRS181 EP type number : 0 410 056 983

Governor

Governor design: : RSF305/2125M64-20

Governer no. : 0 420 021 168

Customer-spec. information Customer : MB-PKW

Engine : OMGO3A D35 USA

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 1.70...1.80 : (1.65...1.85)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed nom: 1000

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 5.9...6.0

100 s: (5.8...6.1)

cm3 : 0.25Spread

100 s: (0.3)

rpm : 280.02nd speed

Rack travel in mm : 5.1..5.3 FD366

Del.quantity cm3/: 0.8...0.9

100 s: (0.5...0.9)

cm3 : 0.1Spread

100 s: (0.15)

rpm : 280 3rd speed

Rack travel in mm : 5.6..5.8 Del.quantity cm3/ : < FD 366

100 s: 0.5...0.6

cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

rpm : 1000 Speed

Aneroid pressure h: 1900

Del.quantity : 59.0...60.0 1000 : (58.0...61.0) Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.30...9.70

: 2300 Speed rpm 4th rack travel in: 2700

: 0.00...1.00 Speed COM

SET IDLE CONTROL LEVER

POSITION

Speed : 1000 rpm

C12

Rack travel in mm : 1.90...2.00 Rack travel in m: 3.40...3.60 2nd pressure hPa : 750 LOW IDLE 1 Rack travel in m: 5.20...5.60 Control lever position degrees: 8...12 FUEL DELIVERY CHARACTERISTICS Setting point w/out bumper spring : 280 COM Rack travel in mm: 5.2 FD 366 1st version Aneroid pressure h: 1900 Testing: Speed : 1600 rpm Del.quantity cm3/: 56.5...58.1 1000 s: (55.5...59.1) Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 280 Spread cm3 : 2.50 Rack travel in mm : 5.10...5.30 1000 s: (3.0) : 1000 Speed Aneroid pressure h: 1900 MOD Maximum rack trave: 2.00 : 2000 Speed rpm Del.quantity cm3/: 54.0...56.0 1000 s: (53.0...57.0) LOW IDLE 2 Control lever cm3 : 2.50Spread position degrees: 8.0...12.0 1000 s: (3.00) Setting point w/out bumper spring Aneroid pressure h: 1100 rpm : 280 Speed 1000 **CDM** Del.quantity cm3/: 40.0...41.0 1000 s: (39.0...42.0) Rack travel in mm : 5.6 FD 366 cm3 : 2.50Testing: Spread Speed rpm : 200 1000 s: (3.00) Rack travel in mm: MIN.7.0 : 280 Speed MOD Rack travel in mm : 5.6...5.8 Speed rpm : 1000 STARTING FUEL DELIVERY Rack travel in mm : 2.0 Speed : 100 Pipm SET IDLE AUXILIARY SPRING Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) : 400 rpm Rack travel in mm : 4.7.4.8FD366 Rack travel in mm : 20.10...0.00 : 4.3..4.5 FD<366 HIGH IDLE TORQUE CONTROL Torque control curve - 1st version 1st version 1st speed rpm : 1000 Aneroid pressure h: 1900 Rack travel in m: 14.10...14.20 : 2300 Speed rpm -Rack travel in mm: 9.30...9.70 Del.quantity cm3/: 37.0...41.0 1000 s: (36.0...42.0) 2nd speed npm : 1600 Rack travel in m: 13.20...13.40 3rd speed rpm : 2000 Rack travel in m: 12.35...12.65 cm3 : 2.50 Spread 1000 s: (3.00) Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 280 1st version Rack travel in mm: 5.7 / 5.2 < FD Del.quantity cm3/: 8.5-9.0 (5-9.5) Setting Speed : 1000 1000 s: 5.5-6.5 FD<366 rpm Pressure hPa : 1600 cm3 : (5..9.5) Spread Rack travel mm : 0.80...1.20 1000 s: -Measurement SETTING/TESTING ELECTRONIC IDLE 1/min: 1000 Speed REGULATION (ELR) 1st pressure hPa : 1100

C13

Control lever at idle stop Speed

rpm : 305 Rack travel in mm : 11.6...13.0

Del.quantity cm3/: 41.0...49.0 1000 s: -

: 1.8

Control lever at full-load stop

rpm : 2700 Speed Rack travel in mm: 0.0...2.0

Current

Current A

short-duration A: 3.0

Starting test

Speed rpm : 100 Del.quantity cm3/: - min. 1000 s: -

1.8 A

Remarks:

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400

Receiving inspection Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1900 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.487...2.5%7 (2.457...2.577) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 24.0...25.0 (23.0...26.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V isindicated. Tighten fastening screws with 1...2 Nm. Control Lever to fullload stop; voltage value of 2.487... 2.547 V must be attained.

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 5,25...5,75 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 35,5°, max.

9.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. -Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system: adjustment and blocking with device $KDEP 1077 = 16.8^{\circ}...17.2^{\circ}$ (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

Test sheet : MB 3.0 W42 Edition : 02.05.94 : 15.10.91 Replaces : ISO-4113 Test oil

Combination no. : 0 400 076 957

Injection pump

Pump designation: PES6M55C320RS171 EP type number : 0 410 056 989

Governor

Governor design. : RSF315/2300M72-5 Governer no. : 0 420 021 165

Customer-spec. information Customer : MB-PKW

Engine : 0M603-ECE MJ90

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpin: 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.25

100 s: (0.3)

rpm : 300.02nd speed Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 0.65...0.75

100 s: (0.6...1.05)

cm3 : 0.1 Spread 100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1100

: 31.0...32.0 Del.quantity

1000 : (30.0...33.0) cm3 : 2.50 Spread 1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0 3rd rack travel in: 8.60...9.00

rpm : 2500 Speed 4th rack travel in: 2950

Speed rom : 0.00...1.00

SET IDLE CONTROL LEVER **POSITION**

: 1000 Speed rom Rack travel in mm: 1.2...1.3

LOW IDLE 1 Control Lever

position degrees: 12...16

Setting point w/out bumper spring

Speed mpm : 300 cm3 : 2.50 Spread Rack travel in mm: 6.9 1000 s: (3.00) Testing: Speed : 220 STARTING FUEL DELIVERY rom . Minimum rack trave: 8.50 Speed rpm : 300 Rack travel in mm : 6.80...7.00 Speed ripm : 100 Rack travel in mm : 2.00 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00 Speed rpm : 650...750 Speed rpm : 1000 Maximum rack trave: 1.30 HIGH IDLE SET IDLE AUXILIARY SPRING : 360 Speed rpm 1st version Rack travel in mm: 5.3...5.5 Aneroid pressure h: 1100 : (5.2...5.6) rpm : 2500 Speed Rack travel in mm : 8.60...9.00 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) TORQUE CONTROL Torque control curve - 1st version cm3 : 2.50 1st speed rpm : 1000 Spread Rack travel in m: 12.00...12.10 1000 s: (3.00) nd speed rpm : 1406 Rack travel in m: 11.80...12.00 2nd speed LOW IDLE 3rd speed rpm : 2200 Rack travel in m: 11.30...11.50 Speed rpm : 300 Rack travet in mm : 6.80...7.00 Aneroid/Altitude Del.quantity cm3/: 6.5...7.5 Compensator Test 1000 s: (6.0...10.5) Spread cm3 : 1.001000 s: (1.50) 1st version SETTING/TESTING ELECTRONIC IDLE Setting Speed man : 1000 REGULATION (ELR) Pressure hPa : 950 Rack travel mm : 0.00...0.20 Control lever at idle stop Measurement rpm Rack travel in mm : 12.0...13.4 Speed 1/min : 1000 Del.quantity cm3/: 27.0...35.0 1000 s: -1st pressure hPa : 900 Rack travel in m: 0.50...0.70 : 1.8 Current A 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 Control lever at full-load stop rpm Speed : 2950 FUEL DELIVERY CHARACTERISTICS Rack travel in mm: 0.0...1.0 Current short-duration A: 3.0 1st version Starting test Aneroid pressure h: 1100 Speed : 100 MCT Del.quantity cm3/: - min. 1000 s: -: 1400 Speed rpm -Del.quantity cm3/: 31.0...32.5 1.8 A 1000 s: (30.0...33.5) Spread cm3 : 2.50Remarks: 1000 s: (3.0) Aneroid pressure h: 1100 Start-of-delivery sensor system: : 2200 Speed adjustment and blocking with device KDEP 1077 = 19.3°...19.7° rpm Del.quantity cm3/: 34.0...36.0 1000 s: (33.0...37.0) (19.2...19.8°) angular displacement of cam following start of delivery of cytinder no. 1.
Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 300 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)
Control lever on full-load stop. At n = 1000 min. -1 , I = 2.5 A, difference in delivery referenced to full-load delivery (6.3...8.3) ccm/1000 strokes.

Note remarks

Test sheet : MB 3.0 W39 : 10.05.94 Replaces : 29.10.92

Test oil : ISO-4113

Combination no. : 0 400 076 959

Injection pump

Pump designation : PES6M55C32ORS180 EP type number : 0 410 056 984

Governor

Governor design. : RSF315/2300M64-17

Governer no. : 0 420 021 157

Customer-spec. information Customer : MB-PKW

: DM603A-D/A (KAT) Engine

1st version kw : 110.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

firing order : 1-5- 3-6-2-4

Edition

Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

Phasing

1st speed rpm: 1000

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

: 0-60-120-180-240-300

: 0.00 (1.00)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 290.0 Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 0.5...0.6

100 s: (0.5...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1000 Aneroid pressure h: 1850

: 51.0...52.0 Del.quantity

1000 : (50.0...53.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8.4...8.8

: 2500 Speed rpm 4th rack travel in: 2950

riom : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

rpm Rack travel in mm: 5.8

Testing:

Speed rpm Minimum rack trave: 7.00

C18

Speed rom : 290 Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.50 cin3 : 2.50 Sp:read 1000 s: (3.00) : 520...620 Speed rpm : 1000 Speed STARTING FUEL DELIVERY Mes Maximum rack *** 1.80 SET IDLE ACCULARY SPRING : 100 Speed **Lbw** Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Fight : 360 Rack travel in mm: 4.2...4.4 : (4.1...4.5) Rack travel in mm : 20.10...0.00 TORQUE CONTROL HIGH IDLE Torque control curve - 1st version rpm : 1000 1st speed 1st version Rack travel in m: 13.70...13.80 Aneroid pressure h: 1850 : 2500 הזכרו : 1600 2nd speed Speed והסה Rack travel in m: 13.00...13.20 Rack travel in mm : 8.40...8.80 Del.quantity cm3/: 29.0...33.0 1000 s: (28.0...34.0) : 2200 3rd speed rpm Rack travel in m: 12.20...12.40 Spread cm3 : 2.50Aneroid/Altitude 1000 s: (3.00) Compensator Test LOW IDLE Speed rpm : 290
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 5.5...6.5
1000 s: (5.0...9.5) 1st version Setting : 1000 Speed riphi Pressure hPa : 1600 : 0.30...0.70 cm3 : 1.00 Rack travel mm Spread 1000 s: (1.50) Measurement 1/min : 1000 Speed SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st pressure hPa : 1050 Rack travel in m: 3.40...3.60 2nd pressure hPa : 750 Control lever at idle stop : 315 Rack travel in m: 4.90...5.30 rpm Speed Rack travel in mm : (13.1...14.5) FUEL DELIVERY CHARACTERISTICS Del.quantity cm3/: -1000 s: (43.0...51.0) Current A : 1.8 1st version Ameroid pressure h: 1850 Control lever at full-load stop Speed : 1600 rpm : 2950 MOM Del.quantity cm3/ : 50.0...51.5 Rack travel in mm: 0.0...1.0 1000 s: (49.0...52.5) Current Spread cm3 : 2.50short-duration A: 3.0 1000 s: (3.0) Starting test Speed rpm : 100 Del.quantity cm3/: -min. 1000 s: -Aneroid pressure h: 1850 Speed rpm : 2200
Del.quantity cm3/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm3 : 2.50 1.8 A Remarks: 1000 s: (3.00) Aneroid pressure h: 1050 Sliding sleeve pre-travel = 6.5 mm : 1000 Speed rpm Del.quantity cm3/: 33.0...34.0 CHECKING THE IDLE-SPEED AUXILIARY 1000 s: (32.0...35.0) SPRING CUTOFF -Control-lever position 35,5°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. "1.

Difference in start of delivery between max. and min. value = max. 1* angular displacement of cam

Pin projection = 16.60...16.70 mm

Locomotive

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400 Receiving inspection Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.457...2.517 (2.427...2.547) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21.0...22.0 (20.0...23.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.457... 2.517 V must be attained.

Note remarks

Test sheet : MB 2.5 F1 : 02.05.94 Edition : 30.03.87 Replaces : ISO-4113 Test oil

Combination no. : 0 400 076 960

Injection pump

Pump designation : PES6M55C32ORS179 : 0 410 056 985 EP type number

Governor

Governor design.: RSF315/2000M65-6 Governer no. : 0 420 021 161

Customer-spec. information Customer : MB-PKW

Engine : 0M603A-D35 GW

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance + + * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rom : 1000 1st speed

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 5.8...5.9

100 s: (5.7...6.0)

cm3 : 0.25Spread

100 s: (0.3)

2nd speed rpm : 290.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 0.65...0.75

100 s: (0.6...1.05)

Eserce cn3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1900

: 58.0...59.0 Del.quantity

1000 : (57.0...60.0) cm3 : 2.50 1000 : (3.00) Spread

RATED SPEED

1st version Control Lever

position degrees: 50...0 3rd rack travel in: 7.2...7.6

rpm : 2300 Speed 4th rack travel in: 2700

: 0.00...1.00 Speed man

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000 Rack travel in mm: 1.9...2.0

LOW IDLE 1 Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed tpm : 290 Rack travel in mm : 5.7 Spread cm3 : 2.501000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 1000 Del.quantity cm3/: 41.0...42.0 Testina: Speed : 200 MON Minimum rack trave: 7.00 1000 s: (39.0...43.0) : 290 cm3 : 2.50Speed TOR Spread Rack travel in mm: 5.60...5.80
Rack travel in mm: 3.00
Speed rpm: 500...600 1000 s: (3.00) STARTING FUEL DELIVERY : 1000 Speed rpm Maximum rack trave: 1.90 SET IDLE AUXILIARY SPRING rpm : 100 Speed : 400 Del.quantity cm3/: 52.0...0.0 Speed COM 1000 s: (52.0...0.0) Rack travel in mm : 4.2...4.4 : (4.1...4.5) Rack travel in mm : 20.10...0.00 TORQUE CONTROL HIGH IDLE Torque control curve - 1st version 1st speed rpm : 1000 1st version Rack travel in m: 13.60...13.70 Aneroid pressure h: 1900 2nd speed rpm : 1600 nom : 2300 Speed Rack travel in m: 12.60...12.80 d speed rpm : 2000 Rack travel in mm : 7.20...7.60 Del.quantity cm3/: 26.5...30.5 3rd speed Rack travel in m: 11.50...11.70 1000 s: (25.5...31.5) cm3 : 2.50 Spread Anercid/Altitude 1600 s: (3.60) Compensator Test LOW IDLE 1st version Speed rpm : 290 Rack travel in mm : 5.60. .5.80 Settino Speed rpm : 1000 Del.quantity cm3/: 6.5...7.5 1000 s: (6.0...10.5) hPa : 1600 Pressure Rack travel mm : 0.20...0.60 cm3 : 1.00 Spread 1000 s: (1.50) Measurement Speed 1/min : 1000 SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st pressure hPa : 1100 Rack travel in m: 2.85...3.05 2nd pressure hPa : 750 Control lever at idle stop Rack travel in m: 4.60...5.00 rpm . Rack travel in mm : 11.8...13.2 Del.quantity cm3/: 44.0...52.0 1000 s: -FUEL DELIVERY CHARACTERISTICS : 1.8 Current A 1st version Aneroiá pressure h: 1900 Control lever at full-load stop Speed חסרו : 1600 rpm : 2700 Del.quantity cm3/: 54.5...56.1 1000 s: (53.5...57.1) Rack travel in mm: 0.0...1.0 Current Spread cm3 : 2.50short-duration A: 3.0 1000 s: (3.0) Starting test Aneroid pressure h: 1900 Speed rpm : 100 Del.quantity cm3/: - min. 1000 s: -Speed : 2000 rpm Del.quantity cm3/: 50.0...52.0 1000 s: (49.0...53.0) 1.8 A Remarks:

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

* Sliding sleeve pre-travel = 5.2 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 35,5°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
—Control—lever position 33.0°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet : MB 3.0 W29
Edition : 02.05.94
Replaces : 16.10.91
Test oil : ISO-4113

Combination no. : 0 400 076 964

Injection pump

Pump designation : PES6M55C32ORS171 EP type number : 0 410 056 989

Governor

Governor design. : RSF315/2300M72-4 Governor no. : 0 420 021 138

Customer—spec. information Customer : MB-PKW

Engine : 0M603-ECE MJ90

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 1 688 901 111

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

ist speed rpm: 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 6.8...7.0 Del.quantity cm3/ : 0.7...0.8

100 s: (0.7...1.1)

Spread cm3 : 0.1 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 32.0...33.0 1000 : (31.0...34.0)

Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0 3rd rack travel in: 8.50...8.90

Speed rpm : 2500

4th rack travel in: 2950 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000 Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 300 cm3 : 2.50 Spread Rack travel in mm: 6.9 1000 s: (3.00) Testina: Speed : 220 STARTING FUEL DELIVERY rpm Minimum rack trave: 8,50 : 300 mq" Rack travel in mm : 6.80...7.00 Speed : 100 rpm Rack travel in mm: 2.00 Del.quantity cm3/: 52.0...0.0 : 660...760 Speed 1000 s: (52.0...0.0) rom : 1000 Speed Rack travel in mm : 20.10...0.00 man Maximum rack trave: 1.30 HIGH IDLE SET IDLE AUXILIARY SPRING : 360 1st version rpm Rack travel in mm: 5.3...5.5 Aneroid pressure h: 1100 : (5.2...5.6) rpm : 2500 Speed Rack travel in mm : 8.50...8.90 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Spread cm3: 2.50 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.00...12.10 1000 s: (3.00) nd speed rpm : 1400 Rack travel in m: 11.70...11.90 2nd speed rpm LOW IDLE 3rd speed : 2200 rpm Rack travel in m: 11.40...11.60 : 300 Speed rpm Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 7.5...8.5 Ameroid/Altitude Compensator Test 1000 s: (7.0...11.5) cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE Speed : 1000 rom REGULATION (ELR) hPa : 950 : 0.00...0.20 Rack travel m Control lever at idle stop : 315 Measurement Speed rpm Rack travel in mm : 12.0...13.4 Del.quantity 6m3/: 28.0...36.0 1000 s: -Speed 1/min: 1000 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Current A Rack travel in m: 1.80...2.20 Control lever at full-load stop Speed : 2950 rpm FUEL DELIVERY CHARACTERISTICS Rack travel in mm: 0.0...1.0 Current short-duration A: 3.0 1st version Starting test Aneroid pressure h: 1100 Speed rpni Del.quantity cm3/: - min. 1000 s: -Speed : 1400 rpm Del.quantity cm3/: 32.0...33.6 1.8 A 1000 s: (31.0...34.6) Spread cm3 : 2.50 Remarks: 1000 s: (3.0) : ARD =1000 1/MIN Aneroid pressure h: 1100 : - 6.6...8.6 MM3/H. : 2200 Start-of-delivery sensor system: Speed rpm Del.quantity cm3/: 34.0...36.0 adjustment and blocking with device 1000 s: (33.0...37.0) KDEP 1077 = 19.3°...19.7 (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 300 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

: MB 3.0 W30 Test sheet : 02.05.94 Edition Replaces : 15, 10, 91 Test oil : ISO-4113

Combination no. : 0 400 076 965

Injection pump

Pump designation : PES6M55C32ORS174 : 0 410 056 988 EP type number

Governor

Governor design. : RSF315/2300M72-3 : D 420 021 137 Governer no.

Customer spec. information Customer : MB-PKW

: 0M503-Abai, MJ90 Engine

1st version kW : 76.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening |

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm : 1030 1st speed

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.2 Del.quantity cm3/ : 0.7...0.8 100 s: (0.7...1.1)

Spread cm3 : 0.1 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

: 32.5...33.5 Del.quantity

1000 : (31.5...34.5) cm3 : 2.50 1000 : (3.00) Spread

RATED SPEED

1st version Control leven

position degrees: 50...0 3rd rack travel in: 9.10...9.50

rpm : 2500 Speed

4th rack travel in: 2950

: 0.00...1.00 Speed המכות

SET IDLE CONTROL LEVER **POSITION**

Speed rpm : 1000 Rack travel in mm: 1.4...1.5

LOW IDLE 1

Control Lever

position degrees: 12...16

Setting point w/out bumper spring

rpm : 300 cm3 : 2.50Speed Spread Rack travel in mm: 7.1 1000 s: (3.00) Testing: rpm : 220 STARTING FUEL DELIVERY Speed Minimum rack trave: 7.00 rpm : 300 Speed : 100 Rack travel in mm : 7.00...7.20 Speed rpm Del.quantity cm3/: 52.0...0.0 Rack travel in mm: 2.50 rom : 620...720 1000 s: (52.0...0.0) Speed : 1000 Rack travel in mm : 20.10...0.00 Speed **LDW** Maximum rack trave: 1.50 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 5.3...5.5 1st version Aneroid pressure h: 1100 : 2500 : (5.2...5.6) Speed rpm Rack travel in mm : 9.10...9.50 TORQUE CONTROL Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Torque control curve - 1st version rpm : 1000 1st speed Spread cm3 : 2.50Rack travel in m: 12.40...12.50 1000 s: (3.00) 2nd speed : 1800 rom Rack travel in m: 11.80...12.00 LOW IDLE 3rd speed rpm : 2200 Speed rpm : 300 Rack travel in mm : 7.00...7.20 Rack travel in m: 11.50...11.70 Del.quantity cm3/: 7.5...8.5 Aneroid/Altitude 1000 s: (7.0...11.5) Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version SETTING/TESTING ELECTRONIC IDLE Setting Speed rpm : 1000 REGULATION (ELR) hPa : 950 Pressure : 0.00...0.20 Rack travel mm Control lever at idle stop : 315 Measurement Speed rpm 1/min: 1000 Pack travel in mm : 12.8...14.2 Speed Del.quantity cm3/: -1st pressure hPa : 900 1000 s: -Rack travel in m: 0.50...0.70 : 1.8 Current A 2nd pressure hPa : 750 Control lever at full-load stop Rack travel in m: 1.80...2.20 : 2950 Speed rom -Rack travel in mm: 0.0...1.0 FUEL DELIVERY CHARACTERISTICS Current short-duration A: 3.0 1st version Starting test Aneroid pressure in: 1100 : 100 Speed rpm Del.quantity cm3/: -min. 1000 s: -: 1800 Speed rpm Del.quantity cm3/: 34.5...36.1 1.8A 1000 s: (33.5...37.1) cm3 : 2.50Remarks: Spread 1000 s: (3.0) : ARD = 1000 1/MIN: - 6.5...8.5 MM3/H. Aneroid pressure h: 1100 : 2200 Speed Start-of-delivery sensor system: rpm Del.quantity cm3/: 34.5...36.5 1000 s: (33.5...37.5) adjustment and blocking with device $KDEP 1077 = 16.8^{\circ}...17.2^{\circ}$ (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 300 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

: MB 3.0 W31 : 01.05.94 Test sheet Edition Replaces : 16.10.91 Test oil : ISO-4113

Combination no. : 0 400 076 966

Injection pump

Pump designation : PES6M55C32ORS174 EP type number : 0 410 056 988

Governor

Governor design. : RSF315/2300M60-27 Governer no. : 0 420 021 134

Customer spec. information Customer : MB-PKW

Engine : 0M603-Abql. MJ90

1st version kW : 76.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 1 688 901 111

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1,85)

Rack travel in mm : 20.00...22.00

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 0.6...0.7

100 s: (0.5...1.0)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 32.5...33.5 1000 : (31.5...34.5)

: 2.50 Spread cm3 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 9.1...9.5 Speed rpm : 2500

4th rack travel in: 2950

rpm : 0.00...1.00 Speed

SET IDLE CONTROL LEVER POSITION

: 1000 **FIDM** Rack travel in mm: 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

DO2

Speed nom : 290 Spread cm3 : 2.50Rack travel in mm: 6.7 1000 s: (3.00) Testing: Speed nom : 220 STARTING FUEL DELIVERY Minimum rack trave: 7.00 rpm : 290 Speed Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00 Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.50 rpm : 610...710 Speed Speed וחכות : 1000 Maximum rack trave: 1.50 HIGH IDLE SET IDLE AUXILIARY SPRING nom : 360 Speed 1st version Rack travel in mm: 5.2...5.4 Aneroid pressure h: 1100 rpm : 2500 : (5.1...5.5) Speed Rack travel in mm : 9.10...9.50 TORQUE CONTROL Del.quantity cm3/: 22.0...26.0 Torque control curve - 1st version 1000 s: (21.0...27.0) rom : 1000 1st speed Spread cm3 : 2.50Rack travel in m: 12.40...12.50 1000 s: (3.00) 2nd speed rpm : 1800 Rack travel in m: 11.80...12.00 LOW IDLE 3rd speed rpm : 2200 Rack travel in m: 11.50...11.70 Speed rpm : 290 Rack travel in mm : 6.60...6.80 Del.quantity cm3/ : 6.5...7.5 Aneroid/Altitude 1000 s: (6.0...10.5) Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE Speed rpm : 1000 REGULATION (ELR) Pressure hPa : 950 Rack travel mm : 0.00...0.20 Control lever at idle stop rpm : 315 Measurement 1/min: 1000 Rack travel in mm : 12.8...14.2 Speed Del.quantity cm3/: -1000 s: -1st pressure hPa : 900 Rack travel in m: 0.50...0.70 Current A 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0.0...1.0 FUEL DELIVERY CHARACTERISTICS Current short-duration A: 3.0 1st version Starting test Aneroid pressure h: 1100 Speed : 100 rpm Speed rpm : 1800 Del.quantity cm3/ : 24.5...36.1 1000 s: (33.5...37.1) Del.quantity cm3/:-min. 1000 s:- 1.8 A cm3 : 2.50Spread Remarks: 1000 s: (3.0) Aneroid pressure h: 1100 Start-of-delivery sensor system: adjustment and blocking with device Speed rom : 2200 Del.quantity cm3/: 34.5...36.5 1000 s: (33.5...37.5) KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of

cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travei = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

: MB 3.0 W23 Test sheet Edition : 02.05.94 Replaces : 16.10.91 Test oil : ISO-4113

Combination no. : 0 400 076 971

Injection pump

Pump designation : PES6M55C32ORS171 EP type number : 0 410 056 989

Governor

Governor design: : RSF315/2300M60-8 Governer no. : 0 420 021 114

Customer-spec, information Customer : MB-PKW

: OMSG3-ECE Engine

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 1 688 901 111

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.00...12.10

Del.guartity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 290.0 Rack travel in mm : 6.7...6.9 Del.quantity cm3/ : 0.65...0.75

100 s: (0.60...1.05)

cm3 : 0.1 Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1100

Del.quantity : 32.0...33.0 1000 : (31.0...34.0)

: 2.50 cri3

Spread 1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0 3rd rack travel in: 8.5...8.9

rpm : 2500 Speed 4th rack travel in: 2950

rpm : 0.00...1.00 Speed

SET IDLE CONTROL LEVER

POSITION

rpm Rack travel in mm: 1.2...1.3

LOW IDLE 1 Control lever

position degrees: 12...16

Setting point w/out bumper spring

005

cm3 : 2.50 Speed rpm : 290 Spread Rack travel in mm: 6.7 1000 s: (3.00) Testing: Speed : 220 STARTING FUEL DELIVERY rom Minimum rack trave: 8.50 : 290 COM Rack travel in mm : 6.70...6.90 Speed rpm : 100 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 2.00 rpm : 620...720 Speed Rack travel in mm : 20.10...0.00 Speed rpm : 1000 Maximum rack trave: 1.30 HIGH IDLE SET IDLE AUXILIARY SPRING : 360 1st version rpm Rack travel in mm : 5.0...5.2 Aneroid pressure h: 1100 : (4.9...5.3) rpm : 2500 Speed Rack travel in mm : 8.50...8.90 Del.quantity cm3/: 22.0...26.0 TORQUE CONTROL 1000 s: (21.0...27.0) Torque control curve - 1st version rom : 1000 cm3 : 2.501st speed Spread Rack travel in m: 12.00...12.10 1000 s: (3.00) rpm : 1400 2nd speed Rack travel in m: 11.70...11.90 LOW IDLE 3rd speed rpm : 2200 Rack travel in m: 11.40...11.60 rpm : 290 Speed Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 6.5...7.5 1000 s: (6.0...10.5) Aneroid/Altitude Compensator Test Spread cm3 : 1.001000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE : 1000 REGULATION (ELR) Speed mqn hPa : 950 Pressure : 0.00...0.20 Rack travel mm Control lever at idle stop rpm : 315 Measurement Speed 1/min: 1000 Rack travel in mm : 12.3...13.7 Speed Del.quantity cm3/: 29.0...37.0 1000 s: -1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 : 1.8 Current A Control lever at full-load stop Rack travel in m: 1.80...2.20 rpm : 2950 Speed FUEL DELIVERY CHARACTERISTICS Rack travel in mm: 0.0...1.0 Current short-duration A: 3.0 1st version Starting test Aneroid pressure h: 1100 Speed rpm : 100 Del.quantity cm3/: -min. 1000 s: -Speed : 1400 rpm Del.quantity cm3/: 32.0...33.6 1000 s: (31.0...34.6) Spread cm3 : 2.50Remarks: 1000 s: (3.0) Aneroid pressure h: 1100 Start-of-delivery sensor system: Speed rpm : 2200 Del.quantity cm3/ : 34.0...36.0 1000 s: (33.0...37.0) adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of

cylinder no. 1.
Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet : DEE : 24.07.92 Edition : 03.92 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 395

Injection pump

Pump designation : PES6A100D410RS2676 EP type number : 9 410 230 023

Governor

: RSV425...1100A2C2161 Governor design.

-1L

: 9 420 234 133 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6466T Engine

: 120.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 32...34

: 2.45...2.55 Prestroke mm : (2.40...2.60)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 425.0 2nd speed

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 2.0...2.4

100 s: (1.8...2.7)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

Del. quantity : 98.5...102.5)

cm3 : 4.00 Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testina: 1st rack travel in: 8.40 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1205...1215 Speed 3rd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring rpm : 425 Rack travel in mm: 4.9 Testina: Speed : 100 rom Minimum rack trave: 19.00 Speed : 425 rpm Rack travel in mm : 5.30...5.50 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 9.40...9.40 : 750 2nd speed rpm Rack travel in m: 10.70...10.90 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure Rack travel mm : 10.60...10.80 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.20...9.40 2nd pressure hPa : 80 Rack travel in m: 9.40...9.80 3rd pressure hPa : 175 Rack travel in m: 10.30...10.40 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.40 rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 425

Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 20.5...24.5 1000 s: (18.0...27.0)

cm3 : 6.00 1000 s: (8.00)

Remarks:

Spread

: JOHN DEERE # RE23746

Start-of-delivery mark = 15.5° after start of delivery cyl. 1.

1st version

Aneroid pressure h: 700

Speed rpm : 750 Del.quantity cm3/: 116.0...119.0

1000 s: (114.0...121.0)

Aneroid pressure h: rpm : 500 Speed

009

Note remarks

Test sheet : MB : 04.94 Edition : 02.94 Replaces Test oil : ISO-4113

: 0 402 046 825A Combination no.

Injection pump

Pump designation : PES6P110A720LS3282 : 0 412 016 736

EP type number

Governor

Governor design. : RQ300/1100PA800-2 : 0 421 801 593 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 h

1st version kW : 157.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55)

Rack travel in mm : 19.00...21.00

: 6-2-4-1-5-3 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - * : 0.30 (0.75)

Time to cyl. no.

BASIC SETTING

rpm : 1100 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 13.6...13.8

100 s: (13.3...14.0)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 300 2nd speed

Rack travel in mm : 8.85...9.45 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.4 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 13.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 136.0...138.0 Del.quantity

1000 : (133.5...140.5)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 97.0...105.0

Setting point:

: 600 Speed rom Rack travel in mm: 14.0

Testing:

D10

1st rack travel in: 12.15 rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1215...1245 4th rack travel in: 1300 Speed

rpm : 0.00...2.40 Speed

LOW IDLE 1 Control lever

position degrees: 74.0...82.0 Setting point w/cut bumper spring

Speed rpm: 300 Rack travel in mm: 7.3

Testing:

Speed nom : 200 Minimum rack trave: 8.80

Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00 Speed

rpm : 325...365 FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 113.0...116.0

1000 s: (110.0...119.0) cm3 : 5.00 1000 s: (9.00) Spread

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.15

rpm : 1140...1150 Speed

Remarks:

Note remarks

Test sheet : MB Edition : 04.94 Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 046 826

Injection pump

Pump designation : PES6P110A720LS3282-1

EP type number : 0 412 016 746

Governor

Governor design. : RQ300/1100PA786-3 Governor no. : 0 421 801 706

Cust. part no. : 0200747702

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 h

1st version kW : 157.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...4.55)

Rack travel in mm : 19.00...21.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.30 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 13.6...13.8

100 s: (13.3...14.0)

Spread cm3: 0.4

100 s: (0.8)

2nd speed rpm : 300

Rack travel in mm : 8.0...8.6 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3: 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 600

Rack travel in mm : 13.70...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 136.0...138.0

1000 : (133.5...140.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 106.0...114.0

Setting point:

Speed rpm : 600 Rack travel in mm : 13.2

Testing:

1st rack travel in: 12.15

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1220...1250

4th rack travel in: 1300

rpm : 0.00...2.40 Speed

LOW IDLE 1 Control Lever

position degrees: 75.0...83.0 Setting point wout bumper spring

Speed rpm : 300 Rack travel in mm : 5.5

Testing:

Speed : 200 rpm Minimum rack trave: 8.80 rpm : 300 Speed

Rack travel in mm : 5.40...5.60

Rack travel in mm: 2.00

Speed : 330...370 mqn

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 113.0...116.0 1000 s: (110.0...119.0)

Spread cm3 : 5.00

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.15

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

D13

Note remarks

Test sheet : MB : 04.94 Edition : 02.94 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 831A

Injection pump

Pump designation : PES6P110A720LS3282

EP type number : 0 412 016 736

Governor

Governor design. : RQ300/1100PA1015 Governer no. : 0 421 801 613

Customer spec. information

Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55) Rack travel in mm : 19.00...21.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 13.6...13.8

100 s: (13.3...14.0)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 300 2nd speed

Rack travel in mm : 8.85...9.45 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.4

Spread 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 13.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 136.0...138.0

1000 : (133.5...140.5)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version Control lever

position degrees: 97.0...105.0

Setting point:

rpm Rack travel in mm: 14.0

Testing:

1st rack travel in: 12.15

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1300

Speed rpm : 0.00...2.00

LOW IDLE 1 Control lever

position degrees: 74.0...82.0

Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.3

Testing:

Speed : 200 rpm . Minimum rack trave: 8.80 Speed rpm : 300 Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00 Speed : 325...365 COM

FUEL DELIVERY CHARACTERISTICS

1st version

Speed morn : 600

Del.quantity cm3/: 113.0...116.0 1000 s: (110.0...119.0) Spread cm3 : 5.00

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.15

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

Note remarks

Test sheet : LIE

Edition : 26.06.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 076 748

Injection pump

Pump designation : PE6P110A720RS3305

EP type number : 0 412 016 740

Governor

Governor design: : RSV300...1100P1A555

: 0 421 833 379 Governer no.

Customer-spec. information : LIEBHERR Customer

: D 926 TI Engine

1st version kW : 210.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 581 343 009 assembly

Openina |

pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.7)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 400.0 2nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1300 : 183.0...185.0 Del.quantity

1000 : (180.5...187.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...102

Testing:

1st rack travel in: 12.90

: 1040...1050 Speed rom

2nd rack travel in: 4.00

rpm : 1075...1105 Speed

3rd rack travel in: 4.00

: 1090...1120 Speed rom

D16

4th rack travel in: 1260

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 69...77

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4 : 400 Speed rpm

Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 13.90...14.10

2nd speed rpm : 500

Rack travel in m: 13.90...14.10

Aneroid/Altitude Compensator Test

1st version

Setting Speed

Pressure

: 550 nom hPa : 1300

Rack travel mm : 13.90...14.10

Measurement

1/min: 550 Speed

1st pressure hPa : -

Rack travel in m: 12.20...12.40

2nd pressure hPa : 640

Rack travel in m: 13.40...13.60 3rd pressure hPa : 510

Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 550 Speed

Del.quantity cm3/: 149.0...151.0 1006 s: (146.5...153.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

D17

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.80...5.00 Del.quantity cm3/: 10.0...16.0

1000 s: (7.5...18.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

Note remarks

Test sheet

Edition

Replaces Test oil

: LIE : 11.01.93 : 08.92

: ISO-4113

: 0 402 076 748 Combination no.

Injection pump

Pump designation : PES6P110A720RS3305

EP type number : 0 412 016 740

Governor

Governor design. : RSV300...1100P1A555

: 0 421 833 379 Governer no.

Customer-spec. information Customer : LIEBHERR

: D 926 TI Engine

1st version kW : 210.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 100G

Rack travel in mm : 15.40...15.50

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...18.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 400.02nd speed Rack travel in mm: 7.3...7.5 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8)

cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

rpm : 1000 Speed

Aneroid pressure h: 1300

: 185.0...187.0 1000 : (182.5...189.5) Del.quantity

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version Control lever

position degrees: 96...104

Testing:

1st rack travel in: 14.40

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

D18

rpm : 1080...1110 Speed 3rd rack travel in: 4.00

rpm : 1115...1145 Speed

4th rack travel in: 1260

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 69...77 Setting point w/out bumper spring

rpm Speed : 400 Rack travel in mm: 6.9 : 400 Speed rpm

Rack travel in mm : 7.30...7.50

Rack travel in mm : 2.00 rpm : 560...620 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000 Rack travel in m: 15.40...15.50

: 500 2nd speed rpm

Rack travel in m: 15.40...15.60

Aneroid/Altitude Compensator Test

1st version Setting

: 550 Speed rpm hPa : 1300 Pressure

: 15.40...15.50 Rack travel mm

Measurement

1/min: 550 Speed

1st pressure hPa : -

Rack travel in m: 13.40...13.60

2nd pressure hPa : 510 Rack travel in m: 13.70...13.80

3rd pressure hPa : 640

Rack travel in m: 14.90...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 550
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.5...153.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.40

D19

: 1040...1050 Speed rpm

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 145.0...165.0 1000 s: (141.0...169.0) Rack trævel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

Note remarks

Test sheet

: FOR

Edition

: 19.04.94

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 076 750

Injection pump

Pump designation : PES6P120A720RS3311

EP type number

: D 412 026 760

Governor

Severnor destan. : RSV400...1050P2A557

Governer no.

: 0 421 833 394

Customer

Customer-spec. information

: FNH-GEOTECH

Engine

: P 396

1st version kW

Rated speed

: 179 : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 105

Openina .

pressure, bar

: 207...210

Orifice plane

diameter mm

: 0.8

Test Lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.55...3.65

: (3.50...3.70)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

Spread

ripm: 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

cm3 : 0.5

100 s: (0.9)

rpm : 400.0

Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2) cm3 : 0.8

Spread

2nd speed

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

Speed

rpm : 1050

Aneroid pressure h: 1500

: 182.0...184.0 Del.quantity

1000 : (179.0...187.0)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90.0...98.0

Testing:

1st rack travel in: 10.45 Speed rpm : 1093...1098 2nd rack travel in: 4.00 Speed rpm : 1148...1163 3rd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1320 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 67.0...75.0 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 4.7 : 400 Speed rpm Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 : 530...630 Speed rom: TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 10.90...11.00 2nd speed rpm : 750 Rack travel in m: 12.40...12.60 3rd speed rpm : 935 Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1500 Pressure Rack travel mm : 12.40...12.60 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 950 Rack travel in m: 12.20...12.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed : 1050 rpm Del.quartity cm3/: 182.0...184.0 1000 s: (179.0...187.0) cm3 : 5.0Spread 1000 s: (9.0) Aneroid pressure h: 1500

rpm : 750

Del.quantity cm3/: 227.0...233.0 1000 s: (224.0...236.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.45 : 1093...1098 Speed rom STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 180.0...210.0 1000 s: (176.0...214.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.10...5.30 Del.quantity cm3/ : 23.0...29.0 1000 s: (20.0...32.0)

Remarks:

Spread

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

cm3 : 8.00 1000 s: (12.00)

Tractor (tractor engines)

Speed

Note remarks

Test sheet Edition

: FOR : 19.04.94

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 076 751

Injection pump

Pump designation : PESOP 20A720R53311

EP type number

: 0 412 026 760

Governor

Governor design.

: RSV400...1050P2A557-

Governer no.

: 0 421 833 396

Customer-spec. information

Customer

: FNH-GEOTECH

Engine

: P 396

1st version kW

: 157

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 105

Opening

pressure, bar

: 207...210

Orifice plate

diameter im

: 0.8

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mo

: 3.55...3.65

: (3.50...3.70)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 15.2...15.4

100 s: (14.9...15.7)

Spread

Spread

Speed

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 400.0

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.8...2.1

100 s: (1.2...2.4)

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity

: 152.5...154.5

1000 : (149.5...157.5)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 92.0...100.0

022

Testing: 1st rack travel in: 9.35 Speed rpm : 1093...1098 2nd rack travel in: 4.00 rpm : 1148...1163 Speed 3rd rack travel in: 4.00 Speed rpm : 1145...1175 4th rack travel in: 1320 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 70.0...78.0 Setting point w/out bumper spring Speed MC : 400 Rack travel in mm: 4.5 : 400 Speed nom Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 rpm : 520...620 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 9.80...9.90 2nd speed npm : 750 Rack travel in m: 11.10...11.30 3rd speed rpm : 910 Rack travel in m: 11.90...11.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1500 Pressure Rack travel mm : 11.10...11.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 900 Rack travel in m: 10.80...11.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 : 1050 Speed rpm Del.quantity cm3/: 152.5...154.5 1000 s: (149.5...157.5) Spread cm3 : 5.01000 s: (9.0)

Del.quantity cm3/: 191.0...197.0 1000 s: (138.0...200.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 118.0...120.0 1000 s: (115.0...123.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.35 Speed nom : 1093...1098 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 180.0...210.0 1000 s: (176.0...214.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 15.0...21.0 1000 s: (12.0...24.0) Spread cm3 : 8.001000 s: (12.00) Remarks: Latching at 0.75 bar...0.85 bar.

Latching at 0.75 bar...0.85 bar.
Unlatching at 0.40 bar...0.50 bar
Tractor (tractor engines)

Speed

Aneroid pressure h: 1500

COM

Note remarks

Test sheet : MB Edition : 05.94 : 02.94 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 783

Injection pump

Pump designation : PE6P120A320LS7858 : 0 412 626 875 EP type number

Governor

: RQV300...1050PA1065 Governor design.

: D 421 814 368 Coverner no.

Cust. part no. : 0250740002

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 180.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 17.2...17.4

100 s: (16.9...17.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 4.90...5.50 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.93...1.33 travel mm

2nd speed rpm : 370

: 1.75...2.25 travel mm

3rd speed rpm : 420

: 2.18...2.68 rpm : 750 travel mm 4th speed

: 4.62...5.12 travel mm

: 1107 5th speed rpm

: 9.65...9.95 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rom : 1210

Rack travel in ma : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050 Aneroid pressure h: 700

Del.quantity : 172.0...174.0

1000 : (169.0...177.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.25

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

: 1135...1165 Speed rom

4th rack travel in: 1300

riom : 0.00...1.50Speed

LOW IDLE 1 Control lever

position degrees: 62...70

Setting point w/out bumper spring

: 300 rpm Rack travel in mm : 5.20

Testing:

Speed rpm : 200 Minimum rack trave: 8.10 rpm : 300

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

nom : 300...400 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 400 מקח Pressure hPa : 200

Rack travel mm : 10.50...10.60

Measurement

1/min: 400 Speed

1st pressure hPa : 700

Rack travel in m: 11.20...11.30

2nd pressure hPa : 250

Rack travel in m: 10.75...10.95

3rd pressure hPa : -

Rack travel in m: 10.15...10.45

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed : 550 חסרו Del.quantity cm3/: 162.0...166.0

1000 s: (159.0...169.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 200

Speed rpm : 400 Del.quantity cm3/ : 117.5...120.5 1000 s: (114.5...123.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.25

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...145.0 1000 s: (121.0...149.0)

kemarks:

D25

Note remarks

Test sheet : 05.94 Edition : 02.94 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 787

Injection pump

Fump designation : PE6P120A320LS?858 EP type number : 0 412 626 875

Governor

Governor design. : RQ300/1050PA1031-12

Governer no. : 0 421 801 681

: 0240743102 Cust. part no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 180.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Irisp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 17.2...17.4

100 s: (16.9...17.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 4.90...5.50

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) Spread! cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 700

Del.quantity : 172.0...174.0

1000 : (169.0...177.0)

: 5.00 cm3 Spread

1000 : (9.00)

position degrees: 87.0...95.0

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.25

rpm : 1090...1106 Speed

2nd rack travel in: 4.00

mom : 1160...1190 Speed

4th rack travel in: 1300

nom : 0.00...1.50 Speed

LOW IDLE 1

Control lever

position degrees: 70.0...78.0 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.20

Testing:

Speed rpm Minimum rack trave: 7.20

Speed rpm : 300 Rack travel in mm : 5.10...5.30

Rack travel in mm : 2.00 rpm : 360...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 400 Speed man hPa : 200

: 10.50...10.60 Rack travel min

Measurement

1/min: 400 Speed

1st pressure hPa : 700

Rack travel in m: 11.20...11.30 2nd pressure hPa : 250

Rack travel in m: 10.80...11.00

3rd pressure hPa : -

Rack travel in m: 10.15...10.45

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 550

Del.quantity cm3/: 162.0...166.0

1000 s: (159.0...169.0)

cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 200

Speed rpm : 400 Del.quantity cm3/ : 117.5...120.5 1000 s: (114.5...123.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0 1000 s: (137.0...139.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 10.25

rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 270.0...290.0

1000 s: (266.0...294.0)

Remarks:

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Note remarks

Test sheet : MB : 05.94 Edition Replaces : 04.94 Test oil : ISO-4113

Combination no. : 0 402 646 789

Injection pump

Pump designation : PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

Governor design. : RQ300/1050PA1031-10

Governer no. : 0 421 801 679

: 0240740402 Cust. part no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 213.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina (

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300 Rack travel in mm : 5.4...6.0 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 800

Del.quantity : 201.0...203.0

1000 : (198.0...206.0) cm3 : 5.00

1000 : (9.00)

RATED SPEED

Spread

1st version Control lever position degrees: 91.0...99.0 Setting point: Speed rpm : 600 Rack travel in mm: 20.0 Testinu: 1st rack travel in: 11.35 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 Speed rpm : 1165...1195 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Control lever position degrees: 72.0...80.0 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.7 Testina: Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 Speed rpm : 360...400Aneroid/Altitude Compensator Test 1st version Setting : 400 Speed rpm hPa : 350 Pressure Rack travel mm : 11.00...11.10 Measurement 1/min: 400 Speed 1st pressure hPa : 800 Rack travel in m: 12.30...12.40 2nd pressure hPa : 200 Rack travel in m: 10.60...10.80 3rd pressure hPa Rack travel in m: 9.90...10.20 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Speed rpm : 550 Del.quantity cm3/ : 195.0...199.0 1000 s: (192.0...202.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 350 rpm : 400 Del.quantity cm3/: 148.5...151.5 1000 s: (145.5...154.5) Aneroid pressure h: Speed rpm : 500 Del.quantity cm3/ : 126.0...128.0 1000 s: (123.0...131.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.35 Speed rpm : 1090...1106

Speed rpm : 100 Del.quantity cm3/ : 270.0...290.0

1000 s: (266.0...294.0)

Remarks:

STARTING FUEL DELIVERY

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Aneroid pressure h: 800

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 646 793

Injection pump

Pump designation: PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

Governor design. : RQ300/1050PA1030-11

: 0 421 801 728 Governer no.

: 0230749502 Cust. part no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.4...6.0 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed

rpm : 1050 Speed Aneroid pressure h: 800

Del.quantity : 201.0...206.0)

cm3 : 5.00

1000 : (9.00)

position degrees: 89.0...97.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testina:

1st rack travel in: 11.35

rpm : 1090...1106 Speed

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Control Lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm : 5.7

Testing:

Speed rrom : 200 Minimum rack trave: 8.00

Speed rpm : 300 Rack travel in mm : 5.60...5.80

Rack travel in mm : 2.00

Speed rom : 360...400

Aneroid/Altitude Compensator Test

1st version

Setting

: 400 Speed rpm hPa : 350 Pressure

: 11.00...11.10 Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : 800

Rack travel in m: 12.30...12.40

2nd pressure hPa : 200

Rack travel in m: 10.60...10.80

3rd pressure hPa : -

Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 550 Del.quantity cm3/ : 195.0...199.0

1000 s: (192.0...202.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 350

Speed rpm : 400 Del.quantity cm3/ : 148.5...151.5 1000 s: (145.5...154.5

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 126.0...128.0

1000 s: (123.0...131.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.35

Speed rpm : 1090...1106

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 265.0...295.0

.

1000 s: (261.0...299.0)

Note remarks

Test sheet : MB : 05.94 Edition : 02.94 Replaces Test oil : ISO-4113

: 0 402 646 793 Combination no.

Injection pump

Pump designation : PE6P12OA32OLS7846 EP type number : 0 412 626 865

Governor

Governor design. : RQ300/1050PA1030-8

Governer no. : 0 421 801 673

: 0230749502 Cust, part no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 213.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzie holder

assembly : 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Frestroke nm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.4...6.0 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050 Speed Aneroid pressure h: 800

: 201.0...203.0 Del.quantity

1000 : (198.0...206.0)

cm3 : 5.00Spread 1000 : (9.00)

1st version Control Lever position degrees: 89.0...97.0 Setting point: : 600 Speed rpm Rack travel in mm: 20.0 Testing: 1st rack travel in: 11.35 Speed rpm : 1090...1106 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Control Lever position degrees: 70.0...78.0 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.7 Testing: Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 5.60...5.80 Rack travel in mm: 2.00 Speed rpm : 360...400 Aneroid/Altitude Compensator Test 1st version Settina : 400 Speed חסרו Pressure hPa : 350 Rack travel mm : 11.00...11.10 Measurement 1/min: 400 Speed 1st pressure hPa : 800 Rack travel in m: 12.30...12.40

2nd pressure hPa : 200

Rack travel in m: 10.60...10.80

3rd pressure hPa : -Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 800 rpm_ : 550 Speed Del.quantity cm3/: 195.0...199.0

1000 s: (192.0...202.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: 350

Speed rpm : 400 Del.quantity cm3/ : 148.5...151.5 1000 s: (145.5...154.5

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 126.0...128.0

1000 s: (123.0...131.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.35 rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 40.0...70.0 1000 s: (36.0...74.0)

Rack travel in mm : 9.90...10.30

8

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 793A

Injection pump

Pump designation : PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

Governor design. : RQ300/1050PA1030-11

Governer no. : 0 421 801 728

Cust. part no. : 0230749502

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.30 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm: 5.40...6.00 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050 Aneroid pressure h: 800

Del.quantity : 201.0...203.0 1000 : (198.0...206.0)

cm3 : 5.00

1000 : (9.00)

RATED SPEED

Spread

position degrees: 89.0...97.0

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.35

rpm : 1090...1106 Speed

2nd rack travel in: 4.00

Speed rpm : 1165...1195 4th rack travel in: 1300

rpm : 0.00...1.50Speed

LOW IDLE 1

Control lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

: 300 Speed rom Rack travel in mm : 5.7

Testing:

Speed rpm : 200 Minimum rack trave: 8.00

Speed rpm: 300
Rack travel in mm: 5.60...5.80
Rack travel in mm: 2.00
Speed rpm: 360...400

Aneroid/Altitude Compensator Test

1st version Setting

: 400 Speed rptii hPa : 350 Pressure

: 11.45...11.55 Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : 800

Rack travel in m: 12.30...12.40

2nd pressure hPa : 200

Rack travel in m: 10.60...10.80

3rd pressure hPa : -

Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 550 Del.quantity cm3/ : 195.0...199.0

1000 s: (192.0...202.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: 350 Speed rpm : 400

Del.quantity cm3/: 148.5...151.5 1000 s: (145.5...154.5

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 134.5...136.5 1000 s: (131.5...139.5)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.35

Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 265.0...295.0

1000 s: (261.0...299.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 04.94 Edition : 02.94 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 793A Injection pump Pump designation: PE6P120A320LS7846 EP type number : 0 412 626 865 Governor Governor design. : RQ300/1050PA1030-8 Governer no. : 0 421 801 673 : 0230749502 Cust. part no. Customer—spec. information Customer : MERCEDES-BENZ **Engine** : 0M401 LA 1st version kW : 213.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. *C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0.8 Test lines : 1 680 750 075

: 8.00x2.50x1000

(A) Injection pump setting values

Set equal delivery quant.

Insp. values in parentheses

Test pressure, bar: 25...27 : 5.20...5.30 Prestroke mm : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Phasing : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.30 (0.75) Time to cyl. no. : 6 BASIC SETTING rpm: 1050 1st speed Rack travel in mm : 12.30...12.40 Del.quantity cm3/ : 20.1...20.3 100 s: (19.8...20.6) cm3 : 0.5Spread 100 s: (0.9) rpm : 300 2nd speed Rack travel in mm : 5.40...6.00 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Spread cm3 : 0.6100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: 108...110 Speed rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050 Aneroid pressure h: 800 Del.quantity : 201.0...206.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 89.0...97.0 Setting point: : 600 Speed rpm

E08

Outside diameter x Wall thickness x Length mm

per values

BEGINNING OF DELIVERY

Rack travel in mm: 20.0 Testina: 1st rack travel in: 11.35 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 70.0...78.0 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 5.7 Testina: Speed : 200 rpm Minimum rack trave: 8.00 Speed rom : 300 Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 Speed : 360...400 חסרו Aneroid/Altitude Compensator Test 1st version Setting : 400 Speed rpm Pressure hPa : 350 : 11.45...11.55 Rack travel mm Measurement Speed $1/\min : 400$ 1st pressure hPa : 800 Rack travel in m: 12.30...12.40 2nd pressure hPa : 200 Rack travel in m: 10.60...10.80 3rd pressure hPa : -Rack travel in m: 10.10...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 : 550 Speed rpm Del.quantity cm3/: 195.0...199.0 1000 s: (192.0...202.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 350 Speed rpm : 400 Del.quantity cm3/ : 148.5...151.5 1000 s: (145.5...154.5

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.35 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Remarks:

E09

Aneroid pressure h: -

Note remarks

Test sheet : 05.94 Edition : 02.94 Replaces Test oil : ISO-4113

: 0 402 646 795 Combination no.

Injection pump

Pump designation ; PE6P120A320LS7858-1 : D 412 626 911

EP type number

Governor

: RQV300...1050PA1033 Governor design.

: 0 421 814 027 Governer no.

Cust. part no. : 0230749002

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 180.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 17.2...17.4

100 s: (16.9...17.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50 Dei.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.52...0.92 travel mm

2nd speed riom : 575

: 4.27...4.77 travel mm

3rd speed rpm : 625 : 4.72...5.22 travel mm

rpm : 840 4th speed

: 5.94...6.44 travel mm

rpm : 1109 5th speed

travel mm : 8.27...8.57

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170 Speed Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 700

: 172.0...174.0 Del.quantity

1000 : (169.0...177.0)

: 5.00 Spread വ്വാ

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 117.0..125.0

Setting point:

Speed : 1170 rom Rack travel in mm : 10.1

Testing:

1st rack travel in: 10.25

Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1145...1175 Speed

4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1 Control lever

position degrees: 79...87

Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 5.20

Testing:

Speed rom Minimum rack trave: 8.10 Speed : 300 rpm

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

rpm : 300...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 400 Speed rpm hPa : 200 Pressure

: 10.50...10.60 Rack travel mm

Measurement

 $1/\min : 400$ Speed

1st pressure hPa : 700

Rack travel in m: 11.20...11.30

2nd pressure hPa : 250

Rack travel in m: 10.80...11.00

3rd pressure hPa : -

Rack travel in m: 10.15...10.45

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm_ : 550 Speed

Del.quantity cm3/: 162.0...166.0

1000 s: (159.0...169.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 200 rpm : 400 Speed

Del.quantity cm3/: 117.5...120.5

1000 s: (114.5...123.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quartity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.25

Speed : 1090...1100 L DW

STARTING FUEL DELIVERY

Speed

Del.quantity cm3/: 125.0...145.0

1000 s: (121.0...149.0)

Remarks:

:

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 02.94 : ISO-4113 Test oil

Combination no. : 0 402 646 796

Injection pump

Pump designation : PE6P120A320LS7858 EP type number : 0 412 626 875

Governor

Governor design. : RQ300/1050PA1030-12 : 0 421 801 729

Governer no.

: 0230749302

Cust, part no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

: 200.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 991 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm : (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 4.9...5.5

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1050 Aneroid pressure h: 800

: 189.0...191.0 Del.quantity

1000 : (186.0...194.0)

: 5.00 Spread cm3

1000 : (9.00)

position degrees: 88.0...96.0

Setting point:

rpm : 600 Speed Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.75

rom : 1090...1106 Speed

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1300

 r_{pm} : 0.00...1.50Speed

LOW IDLE 1 Control lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.2

Testing:

Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300

Rack travel in mm : 5.10...5.30

Rack travel in mm : 2.00

Speed rpm : 360...408

Aneroid/Altitude Compensator Test

1st version

Setting

Speed man : 400 Pressure hPa : 800

Rack travel mm : 11.70...11.80

Measurement

1/min: 400 Speed

1st pressure hPa : 350

Rack travel in m: 11.20...11.30

2nd pressure hPa : 200

Rack travel in m: 10.50...10.70

3rd pressure hPa : -

Rack travel in m: 9.60...9.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 550 Del.quantity cm3/: 182.0...186.0

1000 s: (179.0...189.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 350

rpm : 400Speed

Del.quantity cm3/: 148.5...151.5

1000 s: (145.5...154.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0)

Spread cn3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.75

rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

Speed nom : 100

Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 646 797

Injection pump

Pump designation : PE6P120A320LS7858 EP type number : 0 412 626 875

Governor

Governor design. : RQ300/1050PA1030-13

Governer no. : 0 421 801 730

: 0230748902 Cust. part no.

Customer-spec. information

Customer : MERCELES-BENZ

: 0M401 LA Engine

1st version kW : 180.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

: 0.30 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 17.2...17.4

100 s: (16.9...17.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 4.90...5.50 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6

Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 700

: 172.0...174.0 Del.quantity 1000 : (169.0...177.0)

cm3 : 5.00

Spread 1000 : (9.00)

position degrees: 87..0...95.0

Setting point:

Speed and the state of t : 600 Rack travel in mm: 20.0

Testina:

1st rack travel in: 10.25

riom : 1090...1106 Speed

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1 Control lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

npm : 300 Speed

Rack travel in mm: 5.2

Testing:

Speed rpm : 200 Minimum rack trave: 7.60 rpm : 300

Rack travel in mm : 5.10...5.30

Rack travel in mm : 2.00

Speed rpm : 360...400

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 400 rpm Pressure hPa : 200

Rack travel mm : 10.45...10.65

Measurement

1/min: 400 Speed

1st pressure hPa : 700

Rack travel in m: 11.20...11.30

2nd pressure hPa : 250

Rack travel in m: 10.80...11.00

3rd pressure hPa :

Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 550

Del.quantity cm3/: 162.0...166.0 1000 s: (159.0...169.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: 200 Speed rpm : 400

Del.quantity cm3/: 117.5...120.5

1000 s: (114.5...123.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.25

Speed rom : 1090...1106

STARTING FUEL DELIVERY

Speed : 100 riom

Del.quantity cm3/: 265.0...295.0

1000 s: (261.0...299.0)

Note remarks

Test sheet : 04.94 Edition : 02.94 Replaces Test oil : ISO-4113

: 0 402 646 797 Combination no.

Injection pump

Pump designation : PE6P120A320LS7858 EP type number : 0 412 626 875

Governor

Governor design. : RQ300/1050PA1030-4 Governer no. : 0 421 801 664

: 0230748902 Cust. part no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 180.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6-3-5-2-4-1

Phasing : 0-50-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 3002nd speed

Rack travel in mm : 4.90...5.50 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 700

Del.quantity : 170.0...172.0 1000 : (167.0...175.0)

cm3 : 5.00Spread 1000 : (9.00)

1st version Control Lever position degrees: 87..0...95.0 Setting point: Speed rpm Rack travel in mm: 20.0 Testina: 1st rack travel in: 10.15 Speed rpm : 1090...1106 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Control lever position degrees: 70.0...78.0 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.2 Testing: Speed rpm : 200 Minimum rack trave: 7.60 : 300 mqn Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 rpm : 360...400 Speed Aneroid/Altitude Compensator Test 1st version Setting : 400 Speed **HOM** hPa : 200 Pressure : 10.45...10.65 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 700

Rack travel in m: 11.10...11.20 2nd pressure hPa : 250 Rack travel in m: 10.80...11.00 3rd pressure hPa : -Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 rpm : 550 Speed Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0)

cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 200 Speed rpm : 400 Del.quantity cm3/: 117.5...120.5 1000 s: (114.5...123.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.15 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 40.0...70.0 1000 s: (36.0...74.0) Rack travel in mm : 9.90...10.30

Note remarks

Test sheet : MB Edition : 04.94 : 12.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 916X

Injection pump

Pump designation: PE6P120A320LS7836-10

EP type number : 0 412 626 854

Governor

: RQV300...1050PA797 Governor design.

-17

: 0 421 813 884 Governer no.

Cust. part no. : 0200740302

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-246-300 Phasing

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 13.15...13.25

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

770m : 300 1st speed

travel mm : 1.11...1.41

rpm : 637 2nd speed

: 4.93...5.43 travel mm

rpm : 830 3rd speed

: 6.02...6.52 travel mm : 1107 4th speed rom

: 8.28...8.68 travel mm

rpm : 1218 5th speed

: 9.75...10.25 travel mm

GUIDE SLEEVE POSITION Control-lever position Speed rpm : 1125

Rack travel in mm : 14.90...17.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1400

: 201.5...203.5 Del.quantity

1000 : (198.5...206.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 118...126

Testing:

1st rack travel in: 12.20

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 80...88

Testing:

: 200 Speed LDW Minimum rack trave: 7.60 : 300 mom

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rom : 300...500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 400 Speed MOL Pressure hPa : 1400

Rack travel mm : 13.15...13.25

Measurement

Speed 1/min: 400

1st pressure hPa : 250

Rack travel in m: 11.10...11.30 *

2nd pressure hPa : 400

Rack travel in m: 12.00...12.20 *

5th pressure hPa : -

Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min: 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 : 800 Speed rom .

Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0)

cm3 : 8.00

Spread 1000 s: (12.0)

Aneroid pressure h: 350

Speed rpm : 400 Del.quantity cm3/ : 148.5...151.5

1000 s: (145.5...154.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 129.0...131.0

1000 s: (126.0...134.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed CDM

Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

* Value only applies to initial setting of LDA spring.

Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

Note remarks

Test sheet : MB Edition : 05.94 : 12.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 940x

Injection pump

Cust. part no.

Pump designation: PE6P120A320LS7836-10

: 0200742202

: 0 412 626 854 EP type number

Governor

Governor design. : RG300/950PA971-9 : 0 421 801 732 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kw : 200.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 683 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 13.15...13.25

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950 Aneroid pressure h: 1400

Del.quantity : 203.5...205.5 1000 : (200.5...208.5)

cm3 : 5.00 1000 : (9.00) Spread

position degrees: 92.0...100.0

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testina:

1st rack travel in: 12.20

Speed rom : 990...1006

and rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1200

rpm : 0.00...1.50 Speed

LOW IDLE 1

Control Lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.6

Testing:

Speed rpm : 200 Minimum rack trave: 7.40

rpm : 300

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

rpm : 370...410 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 400 rpm Pressure hPa : 1400

Rack travel mm : 13.15...13.25

Measurement

1/min : 400 Speed

1st pressure hPa : 200 Rack travel in m: <u>11.10...11.30</u> *

2nd pressure hPa : 350

Pack travel in m: 12.00...12.20 *

5th pressure hPa : -

Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Speed rpm: 800 Del.quantity cm3/: 202.0...206.0

1000 s: (199.0...209.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 350

Speed rpm : 400 Del.quantity cm3/ : 148.5...151.5 1000 s: (145.5...154.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0

1000 s: (129.0...137.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 990...1006 Speed

STARTING FUEL DELIVERY

Speed : 100 CDM

Del.quantity cm3/: 205.0...235.0 1000 s: (201.0...239.0)

* Value only applies to initial setting

of LDA spring.

Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

Note remarks

Test sheet : 04.94 Edition : 06.92 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 953x

Injection pump

Pump designation : PE6P120A320LS7836-10

: 0 412 626 854 EP type number

Governor

Governor design. : RQ300/950PA971-8 Governer no. : 0 421 801 625

Cust. part no. : 0200742002

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 180.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rom: 950

Rack travel in mm: 12.65...12.75

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.30...5.90 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950 Aneroid pressure h: 1400

Del.quantity : 187.5...189.5

1000 : (184.5...192.5)

cm3 : 5.00 Spread

1000 : (9.00)

position degrees: 92.0...100.0

Setting point:

Speed MCC Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70 : 990...1006 Speed COM 2nd rack travel in: 4.00

rpm : 1065...1095 Speed 4th rack travel in: 1100 Speed rpm : 0.00...1.50

LOW IDLE 1 Control lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

: 300 rpm -Rack travel in mm : 5.6

Testina:

Speed rpm : 200 Minimum rack trave: 7.40

Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00

Speed : 370...410 rpm

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 400 COM Pressure hPa : 200

: 10.95...11.05 * Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : 1400

Rack travel in m: 12.65...12.75

2nd pressure hPa : -

Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Speed rpm : 950 Del.quantity cm3/ : 187.5...189.5 1000 s: (184.5...192.5)

Spread cm3 : 5.00

1000 s: (9.0)

Aneroid pressure h: 1400

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 200 Speed : 400 rpm

Del.quantity cm3/: 117.5...120.5 1000 s: (114.5...123.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 990...1006

STARTING FUEL DELIVERY

: 100 Speed rom

Rack travel in mm : 10.30...10.60

* Value only applies to initial setting of LDA spring. Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

Note remarks

Test sheet : MB : 04.94 Edition : 12.93 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 958x

Injection pump

Pump designation: PE6P120A320LS7836-10

EP type number : 0 412 626 854

Governor

Governor design. : RQV300...950PA797-33

: 0 421 813 958 Governer no.

Cust. part no. : 0200742102

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M401 LA Engine

: 180.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

T**e**st oil

inlet temp. *C : 33...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-160-240-300 Phasing

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rom: 950

Rack travel in mm : 12.65...12.75

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.30...5.90 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.00...1.50 travel mm

2nd speed : 780 rpm

: 6.10...6.60 travel mm

3rd speed : 1008 rpm

: 8.30...8.80 travel mm : 1092

4th speed **HDM**

11.00...10.30 travel mm

: 1190 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed nom : 950 Aneroid pressure h: 1400

: 187.5...189.5 Del.quantity

1000 : (184.5...192.5)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testina:

1st rack travel in: 11.70 Speed : 990...1000 rpm 2nd rack travel in: 4.00

: 1065...1095 Speed rpm

4th rack travel in: 1200

Speed : 0.00...1.00 rom

LOW IDLE 1 Control lever

position degrees: 78...86

Testina:

: 200 Speed mom Minimum rack trave: 7.40 : 300 nom

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rom : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 400 rpm Pressure hPa : 200

: 10.95...11.05 * Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : 1400

Rack travel in m: 12.65...12.75

2nd pressure hPa : -

Rack travel in m: 10.60...10.90

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 : 800 Speed rpm

Del.quantity cm3/: 186.0...190.0

1000 s: (183.0 ...193.0)

Spread cm3 : 8.001000 s: (12.0)

Anerold pressure h: 200 Speed rpm : 400

Del.quantity cm3/: 117.5...120.5 1000 s: (114.5...123.5)

Ameroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 990...1000

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0)

* Value only applies to initial setting of LDA spring.

Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

Note remarks

Test sheet Edition : 04.94 Replaces : 02.94 Test oil : TSO-4113

Combination no. : 0 402 646 976

Injection pump

Pump designation: PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

Governor design. : R9300/1050PA1031 Governer no. : 0 421 801 642

Cust. part no. : 0230740902

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 33...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.5 Spread

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

: 230.0...232.0 Del.quantity

1000 : (227.0...235.0)

cm3 : 5.00 Spread

1000 : (9.00)

1st version Control Lever position degrees: 93.0...101.0 Setting point: **: 60**0 Speed rpm Rack travel in mm : 20.0 Testing: 1st rack travel in: 12.00 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 Speed rpm: 1165...1195 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Control Lever position degrees: 70.0...78.0 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.2 Testing: Speed rpm : 200 Minimum rack trave: 7.10 rpm : 300 Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 rom : 380...420 Speed Aneroid/Altitude Compensator Test 1st version Setting : 400 Speed rpm hPa : 550 mm : 12.20...12.30 Pressure Rack travel mm Measurement 1/min : 400 Speed 1st pressure hPa : 1000 Rack travel in m: 12.95...13.50 2nd pressure hPa : 300 Rack travel in m: 10.90...11.10 3rd pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Speed rpm : 1050 Del.quantity cm3/ : 226.0...230.0 1000 s: (223.0...233.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 550 rpm : 400 Speed Del.quantity cm3/: 189.5...192.5 1000 s: (186.5...195.5) Aneroid pressure h: -Speed rpm : 500 Del.quarytity cm3/ : 131.0...133.0 1000 s: (128.0...136.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1090...1106 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 270.0...290.0 1000 s: (266.0...294.0) Remarks: :

1st version

Aneroid pressure h: 1000

Note remarks

Test sheet : MB Edition : 04.94 Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 545 977

Injection pump

Pump designation : PE6P12DA32DLS7846 EP type number : 0 412 626 865

Governor

Governor design: : RQ300/1050PA1030-1

: 0 421 801 641 Governer no.

Cust. part no. : 0230741002

Customer spec, information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. 'C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in men: 4.90...5.50 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

Del.quantity : 250.0...235.0)

: 5.00 1000 : (9.00)

1st version Control lever position degrees: 93.0...101.0

Setting point:

: 600 Speed mom Rack travel in mm: 20.0

Testina:

1st rack travel in: 12.00 Speed rpm : 1090...1106 2nd rack travel in: 4.00 rpm : 1165...1195 Speed

4th rack travel in: 1300 Speed rom : 0.00...1.50

LOW IDLE 1 Control lever

position degrees: 67.0...75.0 Setting point w/out bumper spring

rom : 300 Rack travel in mm: 5.2

Testina:

Speed rpm : 200 Minimum rack trave: 7.50 Speed : 300 riom .

Rack travel in mm : 5.10...5.30

Rack travel in mm: 2.00 Speed riom : 360...400

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 400 Speed Pressure hPa : 550

Rack travel mm : 12.20...12.30

Measurement

Speed 1/min: 400

1st pressure hPa : 1000

Rack travel in m: 12.95...13.05 2nd pressure hPa : 300 Rack travel in m: 10.90...11.10

3rd pressure hPa : -

Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1050 Del.quantity cm3/ : 226.0...230.0

1000 s: (223.0...233.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: 550 : 400 Speed rpm

Del.quantity cm3/: 189.5...192.5 1000 s: (186.5...195.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 131.0...133.0

1000 s: (128.0...136.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00

rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

Speed : 100 ripm

Rack travel in mm : 10.20...10.50

Note remarks

Test sheet : MB : 05.94 Edition : 02.94 Replaces : ISO-4113 Test oil

: 0 402 646 977 combination no.

Injection pump

Pump designation: PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

Governor design. : RQ300/1050PA1030-14

: 0 421 801 731 Governer no.

Cust. part no. : 0230741002

Customer-spec. information

Customer : MERCEDES-BEN7

: 0M401 LA Engine

: 230.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed mpm: 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed nom : 300

Rack travel in mm : 4.90...5.50 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

: 230.0...232.0 Del.quantity

1000 : (227.0...235.0)

: 5.00 Spread cm3

1000 : (9.00)

position degrees: 93.0...101.0

Setting point:

: 600 Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.00

Speed rpm : 1090...1106

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1 Control Lever

position degrees: 67.0...75.0 Setting point w/out bumper spring

rpm Rack travel in mm: 5.2

Testing:

rpm Speed Minimum rack trave: 7.50 : 300 Speed rpm

Rack travel in mm : 5.10...5.30

Rack travel in mm: 2.00 Speed : 360...400 rom

Aneroid/Altitude Compensator Test

1st version Settina

: 400 Speed rpm hPa : 550 Pressure

Rack travel mm : 12.20...12.30

Measurement

1/min: 400 Speed

1st pressure hPa : 1000

Rack travel in m: 12.95...13.05

2nd pressure hPa : 300

Rack travel in m: 10.90...11.10

3rd pressure hPa : -

Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 1050 Speed

Del.quantity cm3/: 226.0...230.0 1000 s: (223.0...233.0)

cm3 : 8.00 Spread

1000 s: (12.0) Aneroid pressure h: 550

Speed rpm : 400 Del.quantity cm3/ : 189.5...192.5 1000 s: (186.5...195.5)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 131.0...133.0

1000 s: (128.0...135.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed : 100 rpin

Del.quantity cm3/: 265.0...295.0

1000 s: (261.0...299.0)

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

Combination no. : D 402 646 979

Injection pump

Pump designation : PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

Governor design: RQ300/950PA1032-9

Governer no. : 0 421 801 733

Cust. part no. : 0150745602

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm: 12.95...13.05

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 4.90...5.50

Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9)

cm3 : 0.6 Spread 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

Del.quantity : 250.0...235.0)

: 5.00 Spread cm3

1000 : (9.00)

1st version Control lever

position degrees: 91.0...99.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.90 Speed rpm : 990...1006 2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1300

Speed rom : 0.00...1.50

LOW IDLE 1 Control Lever

position degrees: 66.0...74.0 Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 5.2

Testina:

Speed rpm : 200 Minimum rack trave: 7.50 rpm : 300 Speed

Rack travel in mm : 5.10...5.30

Rack travel in mm : 2.00 Speed MON : 360...400

Aneroid/Altitude Compensator Test

1st version Settina

: 400 Speed rpm hPa : 550 Pressure

: 12.20...12.30 Rack travel mm

Measurement

1/min : 400 Speed

1st pressure hPa : 1000

Rack travel in m: 12.95...13.05

2nd pressure hPa : 300

Rack travel in m: 10.90...11.10

3rd pressure hPa : -

Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 950 Speed

Del.quantity cm3/: 227.0...231.0 1000 s: (224.0...234.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 550

rpm : 400 Del.quantity cm3/: 189.5...192.5 1000 s: (186.5...195.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 131.0...133.0 1000 s: (128.0...136.0)

Spread

cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

rpm : 990...1006 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 265.0...295.0

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1000 s: (261.0...299.0)

Remarks:

Note remarks

Test sheet : 05.94 Edition Replaces : 04.92 : ISO-4113 Test oil

Combination no. : 0 402 648 817A

Injection pump

Pump designation: PE8P120A320LS7801-10

EP type number : 0 412 628 806

Governor

Governor design. : RQ300/1050PA762-16

Governer no. : 0 421 801 620

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version kW : 285.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.85...12.95

Del.quantity cm3/: 17.1...17.3

100 s: (16.8...17.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300

Rack travel in mm : 5.90...6.50 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.5

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500 Aneroid pressure h: 1050

: 171.0...173.0 Del.quantity

1000 : (168.0...176.0)

Spread

cm3 : 4.00 1000 : (7.00)

RATED SPEED

1st version

Control Lever

position degrees: 93.0...101.0

Setting point:

Speed rpm Rack travel in mm: 20.0 Testina:

1st rack travel in: 11.70

rpm : 1095...1111 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1300

rom : 0.00...1.50Speed

LOW IDLE 1

Control Lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.2

Testing:

Speed : 200 r;pm Minimum rack trave: 8.00

Speed : 300 COM

Rack travel in mm : 6.10...6.30

Rack travel in mm : 2.00

: 380...420 Speed rpm

TORQUE CONTROL

Dimension a mm

: 1050 2nd speed rpm

Rack travel in m: 12.50...12.70

3rd speed rpm : 500

Rack travel in m: 12.85...12.95

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rpm

Pressure hPa :

Rack travel mm : 11.35...11.65

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 220

Rack travel in m: 11.75...11.85

2nd pressure hPa : 300

Rack travel in m: 12.60...12.80

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050

rpm : 1050 Speed

Del.quantity cm3/: 175.5...178.5

1000 s: (172.5...181.5)

Spread cm3 : 7.00

1000 s: (10.0)

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 146.0...148.0

1000 s: (143.0...151.0) cm3 : 7.00

Spread

1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1095...1111

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 175.0...190.0

1000 s: (171.0...194.0)

Remarks:

F07

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

: 0 402 648 900X Combination no.

Injection pump

Pump designation : PE8P120A320LS7840-10

EP type number : 0 412 628 856

Covernor

Governor design: RQ300/1050PA972-4 Governer no. : 0 421 801 560

Cust, part no. : 0190749802

Customer-spec, information

: MERCEDES-BENZ Customer

Engine : 0M442 A

1st version kW : 250.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20,..5.30 : (5.15,..5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 6.2...6.8 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 750

: 211.0...213.0 Del.quantity

1000 : (208.0...216.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 97.0...105.0

Setting point:

Speed : 600 Rack travel in mm : 20.0

Testina:

1st rack travel in: 11.80

rpm : 1090...1106 Speed

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1250

Speed rom : 0.00...1.50

LOW IDLE 1

Control Lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 6.5

Testing:

Speed : 200 rpm Minimum rack trave: 7.90 Speed : 300 rpm

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00 Speed rpm : 380...420

TORQUE CONTROL

: 0.65 Dimension a mm

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.70...12.90

2nd speed rpm : 900

Rack travel in m: 12.90...13.10

3rd speed rpm : 700

Rack travel in m: 13.40...13.50

Aneroid/Altitude Compensator Test

1st version

Setting

: 400 Speed rom Pressure hPa : 400

: 12.35...12.45 Rack travel mm

Measurement

Speed 1/min: 400

1st pressure hPa : 750

Rack travel in m: 13.40...13.50

2nd pressure hPa : 200

Rack travel in m: 11.50...11.70

3rd pressure hPa : -

FUEL DELIVERY CHARACTERISTICS

Rack travel in m: 11.00...11.30

1st version

Aneroid pressure h: 750 : 1050 Speed CDW.

Del.quantity cm3/: 192.0...196.0

1000 s: (189.0...199.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 400

Speed rpm : 400 Del.quantity cm3/ : 156.5...159.5 1000 s: (153.5...162.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 136.0...138.0

1000 s: (133.0...141.0)

cm3 : 8.00Spread

1000 s: (12.0)

EREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1090...1106

Remarks:

:

Note remarks

Test sheet : MB Edition : 04.94 Replaces : 10.93 Test oil : ISO-4113

Combination no. : 0 402 648 917

Injection pump

Pump designation: PE8P120A320LS7839-10

EP type number : 0 412 628 855

Governor

Governor design. : RQ300/1050PA993-3 Governor no. : 0 421 801 601

Cust. part no. : 0210740202

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 370.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.30 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 15.10...15.30

Del.quantity cm3/: 26.5...26.7

100 s: (26.2...27.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed npm : 300

Rack travel in mm : 6.00...6.60 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 900

Del.quantity : 265.0...267.0

1000 : (262.0...270.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 100.0...108.0

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0 Testing: 1st rack travel in: 15.00 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1250 rpm : 0.00...1.50 Speed LOW IDLE 1 Control lever position degrees: 72.0...80.0 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.3 Testing: Speed : 200 וווכרו Minimum rack trave: 7.20 Speed : 300 rpm -Rack travel in mm : 6.20...6.40 Rack travel in mm : 2.00 : 380...420 Speed TOTAL . TORQUE CONTROL Dimension a mm : ? rpm : 1050 2nd speed Rack travel in m: 15.90...16.10 3rd speed rpm : 800 Rack travel in m: 16.25...16.45 Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed rpm hPa : 900 Pressure : 15.10...15.30 Rack travel mm Measurement 1/min: 550 Speed 1st pressure hPa : 550 Rack travel in m: 12.95...13.15 2nd pressure hPa : 250 Rack travel in m: 10.25...10.55 3rd pressure hPa : 1100 Rack travel in m: 15.25...15.55 4th pressure hPa : 1300 Rack travel in m: 15.60...15.80 5th pressure hPa : Rack travel in m: 9.00...9.30 * START CUT-OUT 1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000 Speed : 1050 MOT

Del.quantity cm3/: 271.0...274.0 1000 s: (268.0...277.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: 2000 : 800 Speed rom

Del.quantity cm3/ : 283.0...287.0 1000 s: (280.0...290.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: 550

Speed rpm : 400 Del.quantity cm3/ : 203.0...205.0 1000 s: (200.0...209.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.00

: 1090...1106 Speed f'(Oh)

STARTING FUEL DELIVERY

: 100 Speed rom.

Del. quantity cm3/: 275.0...295.0

1000 s: (271.0...299.0)

Remarks:

: * N = 500 1/MIN

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Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.95
Test oil : ISO-4113

Combination no. : 0 402 648 926

Injection pump

Pump designation : PE8P120A320L57840 EP type number : 0 412 628 850

Governor

Governor design. : RQ300/1050PA972-11

Governer no. : 0 421 801 739

Cust. part no. : 0220747002

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version km : 250.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.30 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.50...12.70

Del.quantity cm3/: 19.3...19.5

100 s: (19.0...19.8)

Spread cm3: 0.8

100 s: (1.1)

2nd speed rpm : 600

Rack travel in mm : 4.20...4.80 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1000

Del.quantity : 193.0...195.0

1000 : (190.0...198.0)

Spread cm3 : 8.00

1000 : (11.00)

RATED SPEED

1st version Control Lever position degrees: 92.0...100.0 Setting point: Speed rpm : 600 Rack travel in mm: 20.0 Testing: 1st rack travel in: 11.60 rpm : 1090...1105 2nd rack travel in: 4.00 Speed rpm : 1185...1215 4th rack travel in: 1250 rpm : 0.00...1.50Speed LOW IDLE 1 Control Lever position degrees: 70.0...78.0 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 7.90 rpm : 300 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 380...420 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm Pressure hPa : -Rack travel mm : 10.90...11.20 Measurement 1/min: 500 Speed 1st pressure hPa : 250 Rack travel in m: 11.45...11.55 2nd pressure hPa : 400 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100 bel.quantity cm3/ : 180.0...200.0 1000 s: (176.0...204.0)

Remarks:

F13

Speed

Aneroid pressure h: 1000

rpm : 1050

Del.quantity cm3/: 193.0...195.0 1000 s: (190.0...198.0) Spread cm3: 8.00

1000 s: (11.0)

Note remarks

Test sheet : MB : 04.94 Edition : 02.94 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 926K

Injection pump

Pump designation : PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQ300/1050PA972-9

: 0 421 801 632 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

1st version kW : 250.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

: 0.30 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.55...12.65

Del.quantity cm3/: 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 600

Rack travel in mm : 4.20...4.80

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.4Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position Degree: 108...110

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1000

Del.quantity : 193.0...195.0

1000 : (190.0...198.0)

: 6.00 cm3

Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 92.0...100.0

Setting point:

Speed rom : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.60

rpm : 1090...1105 Speed 2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.50

LOW IDLE 1 Control Lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 6.5

Testina:

Speed rpm : 200 Minimum rack trave: 7.90 Speed rpm : 300 Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00 rpm : 380...420 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed CDM : 500 Pressure hPa : -

: 11.00...11.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 250

Rack travel in m: 11.55...11.65

3rd pressure hPa : 400

Rack travel in m: 12.45...12.65

4th pressure hPa : -

Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1050 Del.quantity cm3/: 193.0...195.0

1000 s: (190.0...198.0)

Spread cm3 : 6.001000 s: (9.0)

Aneroid pressure h: 1000 Speed rpm : 800

Del.quantity cm3/: 190.0...194.0

1000 s: (187.0...197.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 136.0...138.0 1000 s: (133.0...141.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1090...1106

Remarks:

:

Note remarks

Test sheet : MB : 04.94 Edition Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 648 927K

Injection pump

Pump designation : PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQV300...1050PA797

-36

: 0 421 813 984 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

: 250.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Open ind

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.55...12.65

Del.quantity cm3/: 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 600 2rid speed

Rack travel in mm : 4.20...4.80 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.4 Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEFVE TRAVEL

rpm : 300 1st speed

: 1.10...1.60 travel mm

rpm : 470 2nd speed

: 3.00...3.50 travel mm

rpm : 830 3rd speed

: 5.90...6.40 travel mm

4th speed rpm : 1110

travel mm : 8.20...8.70

rpm : 1183 5th speed

: 9.60...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD SYOP Rack travel in m: 11.00...11.30 1st version START CUT-OUT Speed rpm : 1050 Aneroid pressure h: 1000 Speed 1/min : 220 (240) : 193.0...195.0 Del.quantity 1000 : (190.0...198.0) FUEL DELIVERY CHARACTERISTICS cm3 : 6.00 Spread 1000 : (9.00) 1st version RATED SPEED Ameroid pressure h: 1000 Speed rpm : 1050 Del.quantity cm3/: 193.0...195.0 1st version 1000 s: (190.0...198.0) Control Lever position degrees: 118...126 cm3 : 6.00Spread 1000 s: (9.0) Testing: Aneroid pressure h: 1000 1st rack travel in: 11.60 : 800 Speed rpm rpm : 1090...1100 Del.quantity cm3/: 190.0...194.0 Speed 2nd rack travel in: 4.00 1000 s: (187.0...197.0) rpm : 1150...1180 Speed cm3 : 8.00 Spread 4th rack travel in: 1250 1000 s: (12.0) Speed rpm : 0.00...1.00Aneroid pressure h: -Speed rpm Del.quantity cm3/: 136.0...138.0 1000 s: (133.0...141.0) LOW IDLE 1 Control Lever position degrees: 82...90 Spread cm3 : 8.00 Setting point w/out bumper spring 1000 s: (12.0) nom : 300 Rack travel in mm: 6.50 **BREAKAWAY** Testing: Speed rpm : 200 1st version Minimum rack trave: 7.90 1mm rack travel less than Speed rpm : 300 Rack travel in mm : 6.40...6.60 full load rack tr: 11.60 Rack travel in mm : 2.00 rpm : 1090...1100 Speed : 380...420 Speed riom STARTING FUEL DELIVERY CONSTANT REGULATION rpm : 300...450 Speed Speed rpm Del.quantity cm3/: 180.0...200.0 Aneroid/Altitude 1000 s: (176.0...204.0) Compensator Test Remarks: 1st version • Setting : 500 Speed ripin Pressure hPa : -: 11.00...11.30 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : 250 Rack travel in m: 11.55...11.65 2nd pressure hPa : 400 Rack travel in m: 12.45...12.65 4th pressure hPa : -

Note remarks

Test sheet : 05.94 Edition Replaces

Test oil : ISO-4113

: 0 402 648 928 Combination no.

Injection pump

Pump designation: PE8P120A320LS7847-2

EP type number : 0 412 628 885

Governor

Governor design: : RQ300/1050PA1030-19

Governer no. : 0 421 801 748

: 0230741202 Cust. part no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

: 280.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 550 1st speed

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.40...6.00 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200 Del.quantity : 238.0...240.0 1000 : (235.0...243.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testina:

1st rack travel in: 13.00

rpm : 1090...1106 Speed

2nd rack travel in: 4.00

Speed rpm : 1175...1205 4th rack travel in: 1350

rpm : 0.00...1.50 Speed

LOW IDLE 1 Control lever

position degrees: 69.0...77.0

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.5

Testing:

Speed rpm : 200 Minimum rack trave: 7.20

Speed : 300 rom

Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00

Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 550

Rack travel in m: 14.75...14.85

2nd speed rpm : 1050

Rack travel in m: 13.95...14.15

3rd speed rpm : 950

Rack travel in m: 14.10...14.30

4th speed rpm : 775

Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Setting

: 400 Speed rpm hPa : 450 Pressure

Rack travel mm : 12.80...13.00

Measurement

1/min: 400 Speed

1st pressure hPa : 1200

Rack travel in m: 14.75...14.85

2nd pressure hPa : 300

Rack travel in m: 11.75...12.05

3rd pressure hPa : -

Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1050 Del.quantity cm3/ : 210.0...214.0 1000 s: (207.0...217.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 450

: 400 Speed rpm

Del.quantity cm3/: 164.5...167.5

1000 s: (161.5...170.5)

Aneroid pressure h: -: 400 Speed COM

Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

Speed riom : 100

Del.quantity cm3/: 50.0...70.0 1000 s: (46.0...74.0)

Rack travel in mm : 9.90...10.90

Remarks:

Note remarks

Test sheet : MB : 04.94 Edition : 02.94 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 928

Injection pump

Pump designation : PE8P120A320LS7847-2

EP type number : 0 412 628 885

Governor

Governor design. : RQ300/1050PA1030-9

Governer no. : 0 421 801 717

: 0230741202 Cust. part no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

: 280.0 : 210C 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-130-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

cm3 : 0.6 Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.40...6.00 bel.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110 rpm : 600

Speed

Rack travel in mm : 19,20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 550 Speed Aneroid pressure h: 1200

Del.quantity : 230.0...243.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0 Testina: 1st rack travel in: 13.00 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1350 rpm : 0.00...1.50 Speed LOW IDLE 1 Control lever position degrees: 69.0...77.0 Setting point w/out bumper spring Speed mom : 300 Rack travel in mm: 5.5 Testing: Speed : 200 CDM Minimum rack trave: 7.20 rpm : 300 Speed Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 rpm : 400...440 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 14.75...14.85 2nd speed rpm : 1050 Rack travel in m: 13.95...14.15 3rd speed rpm : 950 Rack travel in m: 14.10...14.30 4th speed rpm : 775 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting : 400 Speed rpm hPa : 450 Pressure Rack travel mm : 12.80...13.00 Measurement 1/min: 400 Speed 1st pressure hPa : 1200 Rack travel in m: 14.75...14.85 2nd pressure hPa : 300

Rack travel in m: 11.75...12.05

Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

3rd pressure hPa : -

Speed Spread Speed Speed Spread **BREAKAWAY** Speed Speed Remarks:

1st version Aneroid pressure h: 1200 rpm : 1050 Del.quantity cm3/: 210.0...214.0 1000 s: (207.0...217.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: 450 : 400 rpm Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5) Aneroid pressure h: npm : 400 Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0) cm3 : 8.00 1000 s: (12.0)

1st version 1mm rack travel less than

full load rack tr: 13.00 ricm : 1090...1106

STARTING FUEL DELIVERY

: 100 COM Del.quantity cm3/: 50.0...70.0 1000 s: (46.0...74.0) Rack travel in mm : 10.30...11.30

Note remarks

Test sheet : MB : 05.94 Edition : 02.94 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 9288

Injection pump

Pump designation: PE8P120A320LS7847-3

EP type number : 0 412 628 885

Governor

Governor design. : RQ300/1050PA1030-9

Governer no. : 0 421 801 717

: 0230741202 Custo part no.

Customer-spec. information

: MERCEDES-EIFNZ Customer

: 0M402 LA Engine

: 280.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300 Rack travel in mm : 5.40...6.00 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 238.0...240.0 1000 : (235.0...243.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 95.0...103.0

Setting point:

Speed : 600 rpm Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.00 rpm : 1090...1106 2nd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1350 Speed rom : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 69.0...77.0 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.5 Testing: Speed : 200 FDM Minimum rack trave: 7.20 Speed **ITOM** : 300 Rack travel in mm: 5.40...5.60 Rack travel in mm: 2.00 : 400...440 Speed nom TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 14.75...14.85 2nd speed rpm : 1050 Rack travel in m: 13.95...14.15 3rd speed rpm : 950 Rack travel in m: 14.10...14.30 4th speed rpm : 775 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting : 400 Speed rom Pressure hPa : 450 Rack travel mm : 12.80...13.00 Measurement 1/min: 400 Speed 1st pressure hPa : 1200 Rack travel in m: 14.75...14.85 2nd pressure hPa : 300 Rack travel in m: 11.75...12.05

1st version Aneroid pressure h: 1200 rpm : 1050 Speed Del.quantity cm3/: 210.0...214.0 1000 s: (207.0...217.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 450 Speed rpm : 400 Del.quantity cm3/ : 164.5...157.5 1000 s: (161.5...170.5) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

:

Remarks:

3rd pressure hPa : -

Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : 05.94 Edition : 02.94 Replaces : ISO-4113 Test oil

: 0 402 648 9280 Combination no.

Injection pump

Pump designation: PE8P120A320LS7847-2

EP type number : 0 412 628 885

Governor

Governor design. : RQ300/1050PA1030-9

: 0 421 801 717 Governer no.

Cust. part no. : 0230741202

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M402 LA Engine

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening .

: 207 ... 210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-186-225-Phasing

270-315

: 0.30 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.40...6.00 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 230.0...243.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 95.0...103.0

Setting point:

rpm : 600 Speed Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.00 Speed rpm : 1090...1106 2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1350 Speed rom : 0.00...1.50LOW IDLE 1 Control lever position degrees: 69.0...77.0 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.5 Testing: : 200 Speed CDM Minimum rack trave: 7.20 rpm Speed : 300 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 400...440 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 14.75...14.85 rpm : 1050 2nd speed Rack travel in m: 13.95...14.15 3rd speed rpm : 950 Rack travel in m: 14.10...14.30 4th speed rpm : 775 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 400 rpm hPa : 450 Pressure : 12.80...13.00 Rack travel mm Measurement Speed 1/min: 400 1st pressure hPa : 1200 Rack travel in m: 14.75...14.85 2nd pressure hPa : 300 Rack travel in m: 11.75...12.05 3rd pressure hPa : -Rack travel in m: 10.15...10.45 FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 9.80...10.80

•

Remarks:

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 929

Injection pump

Pump designation : PE8P120A320LS7847-2

EP type number : 0 412 628 885

Governor

Governor design. : RQV300...950PA1033-1

2

Governer no. : 0 421 814 093

Cust. part no. : 0230741402

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Openting.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \circ : 0.30 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.44...1.64

2nd speed rpm : 589

travel mm : 4.72...5.22

3rd speed rpm : 790

travel mm : 6.23...6.73

4th speed rpm: 1009

travel mm : 8.32...8.72

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1045

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200 : 238.0...240.0 Del.quantity 1000 : (235.0...243.0) Spread cm3: 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 13.00 rpm : 990...1006 Speed 2nd rack travel in: 4.00 : 1080...1110 Speed rpm 4th rack travel in: 1350 Speed rom : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 64.0...72.0 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm : 5.50 Testing: : 200 Speed rpm -Minimum rack trave: 7.60 : 300 MON Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version : 950 1st speed rpm Rack travel in m: 13.95...14.15 : 900 2nd speed Lbw Rack travel in m: 14.00...14.20 3rd speed rpm : 875 Rack travel in m: 14.15...14.35 ; 800 4th speed rpm Rack travel in m: 14.65...14.85 Aneroid/Altitude Compensator Test

1st version Setting

Speed וחסרו : 400 Pressure hPa : 450

: 12.80...13.00 Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : 1200

Rack travel in m: 14.75...14.85

2nd pressure hPa : 300

Rack travel in m: 11.75...12.05

3rd pressure hPa : -

Rack travel in m: 10.25...10.55

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 950 Speed rpm

Del.quantity cm3/: 212.0...216.0 1000 s: (209.0...219.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 450

Speed rpm : 400 Del.quantity cm3/ : 164.5...167.5 1000 s: (161.5...170.5)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 107.0...109.0

1000 s: (104.0...112.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

: 990...1006 Speed rpm

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 180.0...220.0 1000 s: (176.0...224.0)

Rack travel in mm : 15.05...15.25

Remarks:

Note remarks

Test sheet : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 648 929B

Injection pump

Pump designation : PE8P120A320LS7847-3 EP type number : 0 412 628 886

Governor

Governor design. : RQV300...950PA1033-1

: 0 421 814 093 Governer no.

: 0230741402 Cust. part no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

: 280.0 ist version kW Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

cm3 : 0.6Spread

100 s: (0.9)

mpm : 300 2nd speed

Rack travel in mm : 5.40...6.00 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.24...1.74 travel mm

2nd speed rpm : 589

travel mm : 4.72...5.22

3rd speed MCT : 790

travel mm : 6.23...6.73

4th speed : 1012 mom

: 8.31...8.81 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1045

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200 Del.quantity : 238.0...240.0 1000 : (235.0...243.0) Spread cm3: 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 13.00 Speed rpm : 990...1006 2nd rack travel in: 4.00 : 1080...1110 Speed man 4th rack travel in: 1350 Speed rpm : 0.00...1.50LOW IDLE 1 Control lever position degrees: 64.0...72.0 Setting point w/out bumper spring : 300 rom Rack travel in mm: 5.50 Testina: Speed : 200 rpm Minimum rack trave: 7.60 : 300 rpm Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 950 Rack travel in m: 13.95...14.15 : 900 Libu 2nd speed Rack travel in m: 14.00...14.20 3rd speed : 875 rpm Rack travel in m: 14.15...14.35 : 800 4th speed וחכריו Rack travel in m: 14.65...14.85 Aneroid/Altitude Compensator Test 1st version Settina

: 400

: 12.80...13.00 *

hPa : 450

rpm

1/min: 400 Speed 1st pressure hPa : 1200 Rack travel in m: 14.75...14.85 2nd pressure hPa : 300 Rack travel in m: 11.75...12.05 3rd pressure hPa : -Rack travel in m: 10.25...10.55 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed : 950 MON Del.quantity cm3/: 212.0...216.0 1000 s: (209.0...219.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 450 Speed rpm : 400 Del.quantity cm3/ : 164.5...167.5 1000 s: (161.5...170.5) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 107.0...109.0 1000 s: (104.0...112.0) Spread cm3 : 8.001000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.00 Speed : 990...1006 **ITUM** STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 180.0...220.0 1000 s: (176.0...224.0) Rack travel in mm : 15.05...15.55 Remarks:

* Value only applies to initial setting

Ultimate setting of the LDA spring is

performed by way of the appropriate setting given in the delivery curve.

of LDA spring.

Rack travel mm

Speed

Pressure

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 643 930

Injection pump

Pump designation : PE8P120A320LS7847-3

EP type number : 0 412 628 886

Governor

Governor design. : RQ300/1050PA1031-13

Governer no. : 0 421 801 719

Cust. part no. : 0230741502

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)
Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.30 (0.75)$

Time to cyl. no. : 3

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3: 0.6

100 s: (0.9)

....

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.00 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50LOW IDLE 1 Control Lever position degrees: 70.0...78.0 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 5.5 Testina: Speed : 200 rpm Minimum rack trave: 7.20 Speed rpm : 300

Rack travel in mm : 5.40...5.60 Rack travel in mm: 2.00 Speed rom : 400...440 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 14.75...14.85 2nd speed rpm : 1050 Rack travel in m: 13.95...14.15 3rd speed rpm : 950 Rack travel in m: 14.10...14.30 4th speed rpm : 775 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test

1st version Setting : 400 Speed rpm Pressure hPa : 450 Rack travel mm : 12.80...13.00 *

Measurement 1/min: 400 Speed

1st pressure hPa : 1200

Rack travel in m: 14.75...14.85

2nd pressure hPa : 300

Rack travel in m: 11.75...12.05

3rd pressure hPa : -

Rack travel in m: 10.15...10.45

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 1050

Del.quantity cm3/: 210.0...214.0

1000 s: (207.0...217.0)

Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 450 Speed rpm : 400

Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0)

Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00

rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 250.0...290.0 1000 s: (246.0...294.0)

Remarks:

* Value only applies to initial setting of LDA spring. Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

Note remarks

Test sheet : 04.94 Edition

Replaces

Test oil : ISO-4113

combination no. : 0 402 648 931

Injection pump

Pump designation: PE8P120A320LS7847-2

: 0 412 628 885 EP type number

Governor

Governor design. : RQ300/950PA1032-10

: 0 421 801 735 Governer no.

: 0230741302 Cust. part no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M402 LA Engine

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test Lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : ઠ

BASIC SETTING

rpm: 550 1st speed

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.40...6.00 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

: 238.0...240.0 Del.quantity

1000 : (235.0...243.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 93.0...101.0

Setting point:

rpm Speed Rack travel in mm: 20.0

Testina:

1st rack travel in: 13.0

Speed rpm : 990...1006

2nd rack travel in: 4.00

: 1070...1100 Speed rpm

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever

position degrees: 69.0...77.0 Setting point w/out bumper spring

COM Rack travel in mm: 5.5

Testina:

: 200 Speed Lbw Minimum rack trave: 7.50 rpm : 300

Rack travel in mm : 5.40...5.60

Rack travet in mm: 2.00

Speed : 400...440 rtom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 550

Rack travel in m: 14.75...14.85

rpm : 950 2nd speed

Rack travel in m: 13.90...14.10

3rd speed rpm : 900

Rack travel in m: 14.00...14.20

4th speed rpm : 875

Rack travel in m: 14.15...14.35

: 800 rpm 5th speed

Rack travel in m: 14.65...14.85

Aneroid/Altitude

Compensator Test

1st version

Setting

: 400 Speed rpm Pressure hPa : 450

Rack travel mm : 12.80...13.00 *

Measurement

1/min: 400 Speed

1st pressure hPa : 1200

Rack travel in m: 14.75...14.85

2nd pressure hPa : 300

Rack travel in m: 11.75...12.05

3rd pressure hPa :

Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 950 Speed

rpm Del.quantity cm3/: 212.0...216.0

1000 s: (209.0...219.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 450

Speed rpm : 400

Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 107.0...109.0 1000 s: (104.0...112.0)

cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 990...1006

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 190.0...210.0

1000 s: (186.0...214.0)

* Value only applies to initial setting

of LDA spring.

Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

Note remarks

Test sheet

Edition : 11.04.94

Replaces

Test oil : ISO-4113

: 0 402 648 931 Combination no.

Injection pump

Pump designation: PE8P120A320LS7847-2

EP type number : 0 412 628 885

Governor

Governor design. : RQ300/950PA1032-7

: 0 421 801 705 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0

: 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.4...6.0 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 1.64...1.84

2nd speed rpm : 415

: 3.72...3.92 travei mm

3rd speed rpm : 550

: 5.9...6.1 travel mm

rpm : 1005 4th speed

travel mm : 6.74...6.94

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

1st pressure hPa : 450 1000 : (235.0...243.0) Rack travel in m: 12.8...13.0 cm3 : 6.00 2nd pressure hPa : 300 Spread 1000 : (9.00) Rack travel in m: 11.75...12.05 3rd pressure hPa : -RATED SPEED Rack travel in m: 10.25...10.55 1st version FUEL DELIVERY CHARACTERISTICS Setting point: : 600 Speed rpm 1st version Rack travel in mm: 20.0 Aneroid pressure h: 1200 Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0) Testina: 1st rack travel in: 13.0 rpm : 990...1006 Speed Spread cm3 : 8.002nd rack travel in: 4.00 1000 s: (12.0) : 1070...1100 Speed rpm Aneroid pressure h: 450 4th rack travel in: 1350 rpm : 400 Speed Del.quantity cm3/: 164.5...167.5 Speed rpm : 0.00...1.50 1000 s: (161.5...170.5) LOW IDLE 1 Aneroid pressure h: -Setting point w/out bumper spring rpm : 400 Speed Del.quantity cm3/: 107.0...109.0 (TOM) Rack travel in mm: 5.5 1000 s: (104.0...112.0) Spread cm3 : 8.00 1000 s: (12.0) Testing: Speed rom Minimum rack trave: 7.50 Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00 **BREAKAWAY** 1st version rpm : 400...440 Speed 1mm rack travel less than TORQUE CONTROL full load rack tr: 13.0 Torque control curve - 1st version rpm : 990...1006 Speed 1st speed rpm : 550 Rack travel in m: 14.75...14.85 STARTING FUEL DELIVERY rpm : 950 2nd speed Rack travel in m: 13.9...14.1 3rd speed rpm : 900 Speed rpm : 100 Del.quantity cm3/ : 50.0...70.0 Rack travel in m: 14.0...14.2 4th speed rpm : 875 1000 s: (46.0...74.0) Rack travel in m: 14.15...14.35 Rack travel in mm : 10.3...11.3 5th speed rpm : 800 Rack travel in m: 14.65...14.85 LOW IDLE Aneroid/Altitude Speed rpm : 300 Compensator Test Rack travel in mm : 5.4...5.600 Del.quantity cm3/: 10.0...16.0 1000 s: (7.0...19.0) 1st version cm3 : 6.00Spread Setting 1000 s: (10.0) Speed : 400 rpm . hPa : 1200 Pressure Remarks: Rack travel mm : 14.75...14.85 Measurement 1/min: 400 Speed

: 238.0..,240.0

Del.quantity

Note remarks

Test sheet : MB

Edition : 11.04.94

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 648 931

Injection pump

Pump designation : PE8P120A320LS7847-2

EP type number : 0 412 628 885

Governor

Governor design. : RQ300/950PA1032-7

Governer no. : 0 421 801 705

Cust. part no. : 0230741302

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

ist version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed __rpm : 300.0

Rack travel in mm : 5.4...6.0

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed upon : 300

travel mm : 1.64...1.84

2nd speed rpm : 415

travel mm : 3.72...3.92

3rd speed rpm : 550

travel mm : 5.9...6.1

4th speed rpm : 1005

travel mm : 6.74...6.94

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 550

GO8

Del.quantity : 238.0...240.0 1st pressure hPa : 450 : (235.0...243.0) 1000 Rack travel in m: 12.8...13.0 cm3 : 6.00 Spread 2nd pressure hPa : 300 1000 : (9.00) Rack travel in m: 11.75...12.05 3rd pressure hPa : -RATED SPEED Rack travel in m: 10.25...10.55 1st version FUEL DELIVERY CHARACTERISTICS Setting point: : 600 Speed 1st version rpm Rack travel in mm : 20.0 Aneroid pressure h: 1200 Speed rpm 950 Testing: Del.quantity cm3/: 212.0...216.0 1st rack travel in: 13.0 1000 s: (209.0...219.0) Speed rpm : 990...1006 cm3 : 8.00Spread 2nd rack travel in: 4.00 1000 s: (12.0) Speed rpm : 1070...1100 Aneroid pressure h: 450 4th rack travel in: 1350 : 400 Speed rom Speed riom : 0.00...1.50 Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5) LOW IDLE 1 Aneroid pressure h: -: 400 Setting point w/out bumper spring Speed rpm Del.quantity cm3/: 107.0...109.0 Speed : 300 rpm Rack travel in mm: 5.5 1009 s: (104.0...112.0) cm3 : 8.00Spread Testing: 1000 s: (12.0) Speed mom : 200 Minimum rack trave: 7.50 rpm : 300 Speed **BREAKAWAY** Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 1st version rpm : 400...440 Speed 1mm rack travel less than TORQUE CONTROL full load rack tr: 13.0 Torque control curve - 1st version rpm : 990...1006 Speed rpm : 550 1st speed Rack travel in m: 14.75...14.85 STARTING FUEL DELIVERY 2nd speed rpm : 950 Rack travel in m: 13.9...14.1 3rd speed rpm : 900 rom : 100 Del.quantity cm3/: 50.0...70.0 1000 s: (46.0...74.0) Rack travel in m: 14.0...14.2 : 875 4th speed וחכרו Rack travel in m: 14.15...14.35 Rack travel in mm : 10.3...11.3 npm : 800 5th speed Rack travel in m: 14.65...14.85 LOW IDLE Aneroid/Altitude rpm : 300 Speed Rack travel in mm : 5.4...5.600 Compensator Test Del.quantity cm3/: 10.0...16.0 1000 s: (7.0...19.0) 1st version Spread cm3 : 6.00 Setting 1000 s: (10.0) Speed : 400 mqn Pressure hPa : 1200 Remarks: : 14.75...14.85 Rack travel mm : Measurement Speed 1/min : 400

Aneroid pressure h: 1200

G09

Note remarks

Test sheet : 05.94 Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 931B

Injection pump

Pump designation: PE8P120A320LS7847-3

EP type number : 0 412 628 886

Governor

Governor design. : RQ300/950PA1032-7

Governer no. : 0 421 801 715

: 0230741302 Cust. part no.

Customer spec. information

Customer : MERCEDES-BENZ

: 0M402 LA Engine

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed nom: 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8 Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

: 238.0...240.0 Del.quantity

1000 : (235.0...243.0)

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 93.0...101.0

Setting point:

rpm : 600 Speed Rack travel in mm: 20.0

Testing:

1st rack travel in: 13.0 : 990...1006 Speed MC

2nd rack travel in: 4.00

: 1070...1100 Speed rpm 4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Control Lever position degrees: 69.0...77.0

Secting point w/out bumper spring Speed npm : 300

Rack travel in mm: 5.5

Testing:

: 200 Speed nom Minimum rack trave: 7.50 : 300 Speed CDU

Rack travel in mm : 5.40...5.60

Rack travel in mm: 2.00

Speed rom : 400...440

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 550

Rack travel in m: 14.75...14.85

2nd speed rpm : 950

Rack travel in m: 13.90...14.10

3rd speed rpm : 900 Rack travel in m: 14.00...14.20

4th speed rpm : 875

Rack travel in m: 14.15...14.35

5th speed rpm : 800

Rack travel in m: 14.65...14.85

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 400 rpm Pressure hPa : 450

Rack travel mm : 12.80...13.00 *

Measurement

1/min: 400 Speed

1st pressure hPa : 1200

Rack travel in m: 14.75...14.85

2nd pressure hPa : 300 Rack travel in m: 11.75...12.05

3rd pressure hPa : -

Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 950 Speed rpm

Del.quantity cm3/: 212.0...216.0

1000 s: (209.0...219.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 450

Speed npm : 400 Del.quantity cm3/ : 164.5...167.5 1000 s: (161.5...170.5)

Aneroid pressure h:

Speed rpm : 490 Del.quantity cm3/ : 107.0...109.0

1000 s: (104.0...112.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

: 990...1006 Speed rom

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 50.0...70.0

1000 s: (46.0...74.0)

Rack travel in mm : 9.90...10.90

* Value only applies to initial setting of LDA spring.

Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

Note remarks

Test sheet : MB Edition : 05.94

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 648 9310

Injection pump

Pump designation : PE8P120A320LS7847-2

EP type number : 0 412 628 885

Governor.

Governor design. : RQ300/950PA1032-7

Governer no. : 0 421 801 715

Cust. part no. : 0230741302

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4- 1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.30 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 550 Aneroid pressure h: 1200

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 93.0...101.0

Setting point:

: 600 rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 13.0

Speed rpm : 990...1006

2nd rack travel in: 4.00

rpm : 1070...1100 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever

position degrees: 69.0...77.0 Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 5.5

Testina:

Speed : 200 Ppm Minimum rack trave: 7.50 rpm : 300 Speed

Rack travel in mm: 5.40...5.60 Rack travel in mm: 2.00

Speed rom : 400...440

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 550

Rack travel in m: 14.75...14.85

2nd speed rpm : 950

Rack travel in m: 13.90...14.10

3rd speed rpm : 900

Rack travel in m: 14.00...14.20

4th speed rpm : 875

Rack travel in m: 14.15...14.35

5th speed rpm : 800

Rack travel in m: 14.65...14.85

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 400 **TPITI** hPa : 450 Pressure

Rack travel mm : 12.80...13.00 *

Measurement

1/min: 400 Speed

1st pressure hPa : 1200

Rack travel in m: 14.75...14.85

2nd pressure hPa : 300

Rack travel in m: 11.75...12.05

3rd pressure hPa :

Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 950 rpm

Del.quantity cm3/: 212.0...216.0 1000 s: (209.0...219.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 450

: 400 rpm

Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5)

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 107.0...109.0

1000 s: (104.0...112.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 990...1006

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 50.0...70.0 1000 s: (46.0...74.0)

Rack travel in mm : 9.90...10.90

* Value only applies to initial setting of LDA spring.

Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

G13

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

: 0 402 648 938

Combination no.

Injection pump Pump designation: PE8P120A320LS7840-10

EP type number : 0 412 628 856

Governor

Governor design. : RQ300/1050PA1030-15

Governer no. : 0 421 801 736

: 0230743602 Cust. part no.

Customer-spec, information

Customer : MERCEDES-BENZ

: 0M442 A Engine

: 250.0 ist version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

4-1

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.6

100 s: (0.9)

2rid speed rpm : 300

Rack travel in mm : 6.20...6.80 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110 rpm : 600

Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 750

: 211.0...213.0 Del.quantity 1000 : (208.0...216.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 91.0...99.0

Setting point:

G14

Speed rpm : 600 Rack travel in mm: 20.0 Testing: 1st rack travel in: 11.80 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 69.0...77.0 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 8.80 Speed : 300 rpm -Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 rpm : 380...420 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.70...12.90 rpm : 900 2nd speed Rack travel in m: 12.95...13.05 rpm : 800 3rd speed Rack travel in m: 13.40...13.50 rpm : 700 4th speed Rack travel in m: 13.40...13.50 Aneroid/Altitude Compensator Test 1st version Setting Speed **MC** : 400 Pressure hPa : 400 : 12.35...12.45 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 750 Rack travel in m: 13.40...13.50 2nd pressure hPa : 200 Rack travel in m: 11.50...11.70 3rd pressure hPa : -

1st version Aneroid pressure h: 750 rpm : 1050 Speed Del.quantity cm3/: 192.0...196.0 1000 s: (189.0...199.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 400 rpm : 400 Speed Del.quantity cm3/: 156.5...159.5 1000 s: (153.5...162.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 136.0...138.0 1000 s: (133.0...141.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

G15

Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 648 940

Injection pump

Pump designation: PE8P12OA320LS7847-3

EP type number

: 0 412 628 886

Governor

Governor design. : R0300/950PA1032-11 Governer no. : 0 421 801 737

Cust. part no. : 0240740402

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8- 7- 2- 6- 3- 5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rom: 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm: 5.40...6.00 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 550 Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 93.0...101.0

Setting point:

Speed : 600 rpm Rack travel in mm : 20.0 Testing: 1st rack travel in: 13.00 rpm : 990...1006 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1350 Speed rom : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 68.0...76.0 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.50 Testing: : 200 Speed rpm Minimum rack trave: 7.00 rpm : 300 Speed Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 rpm : 385...425 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 14.35...14.45 2nd speed rpm : 950 Rack travel in m: 13.90...14.10 3rd speed rpm : 825 Rack travel in m: 14.35...14.45 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 400 Pressure hPa : 450 : 12.80...13.00 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 1200 Rack travel in m: 14.35...14.45 2nd pressure hPa : 300 Rack travel in m: 11.75...12.05 3rd pressure hPa : -Rack travel in m: 10.25...10.55 FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1200 Speed rpm : 950 Del.quantity cm3/: 212.0...216.0 1000 s: (209.0...219.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 450 Speed rpm : 400 Del.quantity cm3/ : 164.5...167.5 1000 s: (161.5...170.5) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 107.0...109.0 1000 s: (104.0...112.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 990...(006

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

Note remarks

Test sheet : 04.94 Edition : 02.94 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 940

Injection pump

Pump designation : PE8P12OA32OLS7847-3

EP type number

: 0 412 628 886

Governor

Governor design. : RQ300/950PA1032-8 Governer no. : 0 421 801 723

Cust. part no. : 0240740602

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm : 550 1st speed

Rack travel in mm : 13.95...14.05

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.00...5.60 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110 rpm : 600

Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 225.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 93.0...101.0

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0 Testing: 1st rack travel in: 12.50 rpm : 990...1006 Speed 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Control lever position degrees: 68.0...76.0 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.3 Testing: Speed PDIN : 200 Minimum rack trave: 7.00 : 300 Speed rpm Rack travel in mm : 5.20...5.40 Rack travel in mm: 2.00 Speed : 385...425 nom TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 13.95...14.05 rpm : 950 2nd speed Rack travel in m: 13.50...13.70 rpm : 825 3rd speed Rack travel in m: 13.95...14.05 Aneroid/Altitude Compensator Test 1st version Setting Speed : 400 rpm Pressure hPa : 450 Rack travel mm : 12.30...12.50 Measurement Speed 1/min: 400 1st pressure hPa : 1200 Rack travel in m: 13.95...14.05 2nd pressure hPa : 300 Rack travel in m: 11.25...11.55 3rd pressure hPa : -Rack travel in m: 9.85...10.15 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/: 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/: 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: Speed rpm : 400
Del.quantity cm3/: 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 Speed rpm : 990...1006

STARTING FUEL DELIVERY

.

Remarks:

G19

1st version

Note remarks

Test sheet Edition : 05.94 Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 940B

Injection pump

Pump designation : PE8P120A320LS7847-3

EP type number : 0 412 628 885

Governor

Governor design. : RQ300/950PA1032-8 Governer no. : 0 421 801 723

Cust. part no. : 0240740602

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed mom: 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00 Del.quantity cm3/ : 1.0...1.6 100 s: (0.7...1.9)

Spread cm3 : 0.6100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 93.0...101.0

Setting point:

G20

rpm : 600 Speed Rack travel in mm : 20.0 Testing: 1st rack travel in: 13.00 rtom : 990...1006 Speed 2nd rack travel in: 4.00 Speed rpm : 1065...1095 4th rack travel in: 1350 rpm : 0.00...1.50 Speed LOW IDLE 1 Control lever position degrees: 68.0...76.0 Setting point w/out bumper spring Speed COE: 1801 Rack travel in mm : 5.50 Testina: Speed rpm : 200 Minimum rack trave: 7.00 : 300 Speed rom Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 rpm : 385...425 Speed TORGUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 14.35...14.45 2nd speed rpn : 950 Rack travel in m: "13.90...14.10 3rd speed rpm : 825 Rack travel in m: 14.35...14.45 Aneroid/Altitude Compensator Test 1st version Setting Speed : 400 rpm hPa : 450 Pressure Rack travel mm : 12.80...13.00 Measurement Speed 1/min: 400 1st pressure hPa : 1200 Rack travel in m: 14.35...14.45 2nd pressure hPa : 300 Rack travel in m: 11.75...12.05 3rd pressure hPa : -Rack travel in m: 10.25...10.55 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1200 Speed rpm : 950 Del.quantity cm3/: 212.0...216.0 1000 s: (209.0...219.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 450 Speed rpm : 400 Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 107.0...109.0 1000 s: (104.0...112.0) Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 50.0...70.0 1000 s: (45.0...74.0) Rack trayel in mm : 9.90...10.90

Remarks:

G21

1st version

Note remarks

Test sheet 05.94 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 648 941

Injection pump

Pump designation : PE8P120A320LS7847-3 EP type number : 0 412 628 886

Governor

Governor design. : RQV300...95GPA1035-1

Governer no. : D 421 814 094

Cust, part no. : 0240742202

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rom : 550 1st speed

Rack travel in mm : 14.35...14.45

Del.guantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 5.40...6.00 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.34...1.64 travel mm

2nd speed : 589 mari

: 4.72...5.22 travel mm

: 790 3rd speed rpm

: 5.23...6.73 travel ma

4th speed : 1009 rpm

: 8.32...8.72 travel mm

: 1210 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1050 Speed

Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 550 Speed Aneroid pressure h: 1200 Del.quantity : 225.0...230.0) Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 117.0...125.0 Testina: 1st rack travel in: 13.00 Speed rpm : 993...1003 2nd rack travel in: 4.00 Speed : 1065...1095 **MCL** 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 82.0...90.0 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.50 Testing: Speed riom : 200 Minimum rack trave: 9,50 rpm Speed Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed npm : 550 Rack travel in m: 14.35...14.45 2nd speed npm : 950 Rack travel in m: 13.90...14.10 3rd speed rpm : 825 Rack travel in m: 14.35...14.45

Aneroid/Altitude Compensator Test

1st version Setting Speed

: 400 **CDM** Pressure hPa : 450

Rack travel mm : 12.80...13.00 *

Measurement

Speed 1/min: 400

1st pressure hPa : 1200

Rack travel in m: 14.35...14.45

2nd pressure hPa : 300

Rack travel in m: 11.75...12.05

3rd pressure hPa : -

Rack travel in m: 10.25...10.55

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 950 Speed / Dm

Del. quantity cm3/: 212.0...216.0 1000 s: (209.0...219.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 450 : 400 Speed rpm

Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 107.0...109.0 1000 s: (104.0...112.0)

Spread cin3 : 3.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 993...1003

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 190.0...210.0

1000 s: (186.0...214.0)

Remarks:

* Value only applies to initial setting of LDA spring. Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

Note remarks

Test sheet : MB : 05.94 Edition : 02.94 Replaces : ISO-4113 Test oil

: 0 402 648 942 Combination no.

Injection pump

Pump designation : PE8P120A320LS7847-3

EP type number

: 0 412 628 886

Governor

Governor design. : RQ3CO/950PA1031-16 Governer no. : 0 421 801 722

Cust. part no. : 0240742302

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M402 LA Engine

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. ro. : 8

BASIC SETTING

rpm : 550 1st speed

Rack travel in mm : 14.35...14.45

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.40...6.00

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 93.0...101.0

Setting point:

: 600 rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 13.00 Speed rpm : 990...1006 2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1350

Speed npm : 0.00...1.50

LOW IDLE 1 Control lever

position degrees: 68.0...76.0 Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 5.50

Testing:

Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm

Rack travel in mm : 2.00

Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 13.90...14.10

2nd speed rpm : 825

Rack travel in m: 14.35...14.45

3rd speed rpm : 550

Rack travel in m: 14.35...14.45

Aneroid/Altitude Compensator Test

1st version

Setting : 400 Speed חסרו hPa : 450 Pressure

Rack travel mm : 12.80...13.00

Measurement

1/min: 400 Speed

1st pressure hPa : 1200

Rack travel in m: 13.35...14.45

2nd pressure hPa : 300

Rack travel in m: 11.75...12.05

3rd pressure hPa : -

Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 950 Speed rpm

Del.quantity cm3/: 212.0...216.0

1000 s: (209.0...219.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 450 Speed : 400 rpm

Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 107.0...109.0 1000 s: (104.0...112.0)

cm3 : 8.00 Spiread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed riom : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 260.0...280.0

:

1000 s: (256.0...284.0)

Remarks:

G25

Note remarks

Test sheet : MB Edition : 04.94 Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 648 945

Injection pump

Pump designation : PE8P120A320LS7847-3 EP type number

: 0 412 628 886

Governor

Governor design. : RQ300/1050PA1030-10

Governer no.

: 0 421 801 718

Cust. part no. : 0230747802

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 : 2100 Rated speed

TEST SENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-130-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rom : 550

Rack travel in nm : 13.95...14.05

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.00...5.60 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 225.0...227.0 1000 : (222.0...230.0)

Spread

cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 95.0...103.0

Setting point:

rpm : 600 Speed Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.50 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1300 rpm : 0.00...1.40 Speed LOW IDLE 1 Control Lever position degrees: 68.0...76.0 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm : 5.30 Testina: Speed rpm : 200 Minimum rack trave: 7.10 : 300 Speed rpm Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00 : 385...425 Speed rom TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 13.95...14.05 2nd speed rpm : 1050 Rack travel in m: 13.50...13.70 3rd speed rpm : 950 Rack travel in m: 13.70...13.90 : 800 4th speed rpm Rack travel in m: 13.95...14.05 Ameroid/Altitude Compensator Test 1st version Setting : 400 Speed rpm hPa : 450 Pressure : 12.30...12.50 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 1200 Rack trayel in m: 13.95...14.05 2nd pressure hPa : 300 Rack travel in m: 11.25...11.55 3rd pressure hPa : -Rack travel in m: 9.55...9.85

1st version Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/ : 210.0...214.0 1000 s: (207.0...217.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 450 Speed rpm : 400 Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

:

Remarks:

G27

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 648 945

Injection pump

Pump designation : PE8P120A320LS7847-3

Governor

EP type number : 0 412 628 886

Governor design. : RQ300/1050PA1050-16

Governer no. : 0 421 801 738

Cust. part no. : 0230747802

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315 Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 225.0...227.0 1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.00 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1300 rpm : 0.00...1.40 Speed LOW IDLE 1 Control Lever position degrees: 68.0...76.0 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.40 Testina: Speed : 200 rpm Minimum rack trave: 7.10 Speed rpm : 300 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 385...425 TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 14.35...14.45 rpm : 1050 2nd speed Rack travel in m: 13.95...14.15 3rd speed rpm : 950 Rack travel in m: 14.10...14.30 4th speed rpm : 800 Rack travel in m: 14.35...14.45 Aneroid/Altitude Compensator Test 1st version Settina : 400 Speed LDW. Pressure hPa : 450 Rack travel mm : 12.80...13.00 Measurement Speed 1/min: 400 1st pressure hPa : 1200 Rack travel in m: 14.35...14.45 2nd pressure hPa : 300 Rack travel in m: 11.75...12.05 3rd pressure hPa : -Rack travel in m: 10.15...10.45 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/: 210.0...214.0 1000 s: (207.0...217.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 450 Speed rpm : 400 Del.quantity cm3/ : 164.5...167.5 1000 s: (161.5...170.5) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0)

:

Remarks:

H01

Note remarks

Test sheet : MB : 05.94 Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 945B

Injection pump

Pump designation : PE8P120A320LS7847-3

EP type number : 0 412 628 886

Governor

Governor design. : RQ300/1050PA1030-10

Governer no. : D 421 801 718

Cust. part no. : 0230747802

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM402 LA

: 280.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

HO2

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread

cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

: 225.0...227.0 Del.quantity

1000 : (222.0...230.0) cm3 : 6.00

Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.00 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1300 rpm : 0.00...1.40 Speed LOW IDLE 1 Control lever position degrees: 68.0...76.0 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.40 Testina: Speed : 200 rpm Minimum rack trave: 7.10 Speed : 300 rpm Rack travel in mm : 5.40...5.60 Rack travel in mm: 2.00 Speed : 385...425 rom TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 14.35...14.45 rpm : 1950 2nd speed Rack travel in m: 13.95...14.15 rpm : 950 3rd speed Rack travel in m: 14.10...14.30 4th speed rpm : 800 Rack travel in m: 14.35...14.45 Aneroid/Altitude Compensator Test 1st version Setting : 400 Speed rpm Pressure hPa : 450 Rack travel mm : 12.80...13.00 Measurement 1/min: 400 Speed 1st pressure hPa : 1200 Rack travel in m: 14.35...14.45 2nd pressure hPa : 300 Rack travel in m: 11.75...12.05 3rd pressure hPa : -Rack travel in m: 10.15...10.45

1st version Aneroid pressure h: 1200 rpm : 1050 Speed Del.quantity cm3/: 210.0...214.0 1000 s: (207.0...217.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 450 Speed rpm : 400 Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5) Ameroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 13.00

Speed rpm : 1090...1106

STARTING FUEL DELIVERY

:

Remarks:

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 648 946

Injection pump

Pump designation: PE8P120A320LS7847-3

EP type number : 0 412 628 836

Governor

Governor design. : RQ300/1050PA1031-15

Governer no. : 0 421 801 721

: 0230747902 Cust. part no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M402 LA Engine

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Openina .

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.G0x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

H04

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.40...6.00 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity

: 225.0...227.0

1000 : (222.0...230.0)

Spread cm3: 6.00

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 95.0...103.0

Setting point:

Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.00 Speed rpm : 1090...1106 2nd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1300 rpm : 0.00...1.40 Speed LOW IDLE 1 Control lever position degrees: 69.0...77.0 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.50 Testing: Speed rpm : 200 Minimum rack trave: 7.10 Speed rpm : 300
Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 385...425 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 14.35...14.45 2nd speed rpm : 1050 Rack travel in m: 13.95...14.15 3rd speed rpm : 950 Rack travel in m: 14.10...14.30 4th speed rpm : 800 Rack travel in m: 14.30...14.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 400 MON hPa : 450 Pressure : 12.80...13.00 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 1200 Rack travel in m: 14.35...14.45 2nd pressure hPa : 300 Rack travel in m: 11.75...12.05 3rd pressure hPa : -Rack travel in m: 10.15...10.45 START CUT-OUT

rpm : 600

Speed

1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed : 1050 rjani Del.quantity cm3/: 210.0...214.0 1000 s: (207.0...217.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 450 Speed : 400 rpm Del.quantity cm3/: 164.5...167.5 1000 s: (161.5...170.5) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 104.0...106.0 1000 s: (101.0...109.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.00 Speed rpm : 1090...1106 STARTING FUEL DELIVERY Speed npm : 100 Del.quantity cm3/ : 275.0...295.0 1000 s: (271.0...299.0) Rack travel in mm : 10.00...11.00 Remarks: **APPLICATION**

Omnibus

Note remarks

Test sheet : MB Edition : 05.94 Replaces

Test oil : ISO-4113

: 0 402 648 947 Combination no.

Injection pump

Pump designation: PE8P120A320LS7859 EP type number : 0 412 628 869

Governor

Governor design: : RQ300/950PA1032-12

Governer no. : 0 421 801 741

Cust. part no. : 0230749602

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 907 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

Phasing : 0-45-90-135-180-225-

270-315 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. :8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1000

: 244.0...246.0 : (241.0...249.0) Del.quantity 1000

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 94.0...102.0

Setting point:

Speed rpm Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.75 Speed rpm: 990...1006

2nd rack travel in: 4.00

rpm : 1065...1095 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.20

Testing:

Speed mpm : 200 Minimum rack trave: 8.00

Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00

rom : 360...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 400 Speed rpm hPa : 550 Pressure

: 13.05...13.15 Rack travel mm

Measurement

1/min : 400 Speed

1st pressure hPa : 1000

Rack travel in m: 13.70...13.80

2nd pressure hPa : 250

Rack travel in m: 10.90...11.10

3rd pressure hPa : -

Rack travel in m: 9.45...9.75

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 950
Del.quantity cm3/ : 233.0...237.0
1000 s: (230.0...240.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 550 Speed rpm : 400

Del.quantity cm3/: 207.0...210.0 1000 s: (204.0...213.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.75

Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 255.0...285.0 1000 s: (251.0...289.0)

Remarks:

H07

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 10.93 Test oil : ISO-4113

: 0 402 648 947 Combination no.

Injection pump

Pump designation : PE8P120A320LS7859 EP type number : 0 412 628 869

Governor

Governor design. : RQ300/950PA1032-5 : 0 421 801 668 Governer no.

: 0230749602 Cust. part no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1000

: 244.0...246.0 Del.quantity

1000 : (241.0...249.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 94.0...102.0

Setting point:

Speed COM Rack travel in mm : 20.0

Testina:

1st rack travel in: 12.75 rpm : 990...1006 Speed

2nd rack travel in: 4.00

rpm : 1065...1095 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1 Control lever

position degrees: 70.0...78.0 Setting point wout bumper spring

rpm : 300 Speed Rack travel in mm: 5.20

Testing:

Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300

Rack travel in mm : 5.10...5.30

Rack travel in mm: 2.00

Speed rpm : 360...400

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 400 Pressure hPa : 550

Rack travel mm : 13.05...13.15

Measurement

1/min: 400 Speed

1st pressure hPa : 1000

Rack travel in m: 13.70...13.80

2nd pressure hPa : 250

Rack travel in m: 10.90...11.10

3rd pressure hPa : -

Rack travel in m: 9.45...9.75

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 950

Del.quantity cm3/: 233.0...237.0

1000 s: (230.0...240.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 550

Speed rpm : 400 Del.quantity cm3/ : 207.0...210.0 1000 s: (204.0...213.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.75

riom : 990...1006 Speed

STARTING FUEL DELIVERY

rom : 100 Specd

Del.quantity cm3/: 65.0...95.0

1000 s: (61.0...99.0)

Rack travel in mm : 9.40...9.80

Remarks:

H09

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 648 948

Injection pump

Pump designation : PE8P120A320LS7859 EP type number : 0 412 628 869

Governor

Governor design. : RQ300/1050PA1030-17 Governor no. : 0 421 801 742

Cust. part no. : 0230749802

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 907 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.30 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1000

Del.quantity : 244.0...246.0 1000 : (241.0...249.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 94.0...102.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.60

rpm : 1090...1106 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1

Control Lever

position degrees: 69.0...77.0 Setting point w/out bumper spring

rom : 300 Rack travel in mm: 5.2

Testing:

Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Speed

Rack travel in mm : 5.10...5,30

Rack travel in mm : 2.00

Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 550

Rack travel in m: 13.70...13.80

2nd speed rpm : 1050

Rack travel in m: 13.50...13.70

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 400 rpm Pressure hPa : 550

: 13.05...13.15 Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : 1000

Rack travel in m: 13.60...13.70

2nd pressure hPa : 250

Rack travel in m: 10.90...11.10

3rd pressure hPa : -

Rack travel in m: 9.45...9.75

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 1050 Speed

Del.quantity cm3/: 228.0...232.0

1000 s: (225.0...235.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 550

Speed rpm : 400 Del.quantity cm3/ : 207.0...210.0 1000 s: (204.0...213.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 255.0...285.0 1000 s: (251.0...289.0)

:

Remarks:

H11

Note remarks

Test sheet : MB : 05.94 Edition : 10.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 948

Injection pump

Pump designation : PE8P12OA32OLS7859 EP type number : 0 412 628 869

Governor

Governor design. : RQ300/1050PA1030-7 Governer no. : 0 421 801 669

Cust. part no. : 0230749802

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed #5m : 550

Rack travel in mm : 13.70...13.80

Del.quamity cm3/: 24.4...24.6

100 s: (24.1...24.9)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed inpan : 300

Rack travel in mm : 4.90...5.50 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-Lever position

Degree: 108...110 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 550 Aneroid pressure h: 1000

: 244.0...246.0 Del.quantity 1000 : (241.0...249.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 94.0...102.0

Setting point:

Speed Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.60

Speed rpm : 1090...1106

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1300

Speed rom : 0.00...1.50

LOW IDLE 1

Control Lever

position degrees: 69.0...77.0 Setting point w/out bumper spring

Speed COM Rack travel in mm: 5.2

Testing:

Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Speed

Rack travel in mm : 5.10...5.30

Rack travel in mm: 2.00

Speed COM : 360...400

TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 550

Rack travel in m: 13.70...13.80

2nd speed rpm : 1050

Rack travel in m: 13.50...13.70

Aneroid/Altitude Compensator Test

1st version

Setting

: 400 Speed rpm hPa : 550 Pressure

: 13.05...13.15 Rack travel mm

Measurement

Speed 1/min: 400

1st pressure hPa : 1000

Rack travel in m: 13.60...13.70

2nd pressure hPa : 250

Rack travel in m: 10.90...11.10

3rd pressure hPa : -

Rack travel in m: 9.45...9.75

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 1050 Speed

Del.quantity cm3/: 228.0...232.0 1000 s: (225.0...235.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 550

Speed : 400 man

Del.quantity cm3/: 207.0...210.0

1000 s: (204.0...213.0)

Ameroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

Speed rom : 1090...1106

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 65.0...95.0

1000 s: (61.0...99.0)

Rack travel in mm : 9.40...9.80

Remarks:

Note remarks

Test sheet : 05.94 Edition : 11.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 949

Injection pump

Pump designation : PE8P120A320LS7863 EP type number : 0 412 628 874

Governor

Governor design. : RQV300...950PA1050

: D 421 815 381 Governer no.

: 0240740002 Cust. part no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 370.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 95...115

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 14.00...15.00

Firing order : 8-7-2-6-3-5-

Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 28.1...28.3

100 s: (27.8...28.6)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.38...1.88 travel mm

2nd speed

rpm : 350 : 2.31...2.81 travel mm

3rd speed rpm : 510

: 3.27...3.77 travel mm

rpm : 790 4th speed

: 4.75...5.25 travel mm

5th speed rpm: 1006

travel mm : 7.25...7.75

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1160 Speed Rack travel in mm : 12.50...15.10 1st version Setting FULL LOAD DELIV. AT FULL LOAD STOP Speed rpm : 850 hPa : 500 Pressure 1st version : 12.10...12.30 Rack travel mm Speed rpm : 950 Aneroid pressure h: 1200 Measurement Del.quantity : 281.0...283.U Speed 1/min : 850 1000 : (278.0...286.0) Spread : 6.00 cm3 1st pressure hPa : 1200 Rack travel in m: 14.95...15.05 2nd pressure hPa : 150 1000 : (9.00) RATED SPEED Rack travel in m: 8.60...9.00 3rd pressure hPa : -1st version Rack travel in m: 7.80...8.10 Control Lever position degrees: 110...118 START CUT-OUT Testing: 1/min : 220 (240) Speed 1st rack travel in: 13.80 : 990...1000 Speed rom FUEL DELIVERY CHARACTERISTICS 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1250 1st version Speed rpm : 0.00...1.50 Aneroid pressure h: 1200 Speed rpm : 750
Del.quantity cm3/ : 275.0...279.0
1000 s: (272.0...282.0) LOW IDLE 1 Control Lever position degrees: 72...80 Spread cm3 : 8.00 Setting point w/out bumper spring 1000 s: (12.0) Speed rpm : 300 Aneroid pressure h: 1200 Rack travel in mm: 5.20 Speed rpm : 550 Del.quantity cm3/: 265.0...271.0 1000 s: (262.0...274.0) Testing: : 200 Speed rpm Spread cm3 : 8.0Minimum rack trave: 7.30 1000 s: (12.0) rpm : 300 Aneroid pressure h: 500 Speed rpm : 400 Del.quantity cm3/ : 194.5...197.5 1000 s: (191.5...200,5) Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 300...500 Speed Aneroid pressure h: -Speed rpm : 500 TORQUE CONTROL Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Dimension a mm : ? Torque control curve - 1st version Spread cm3 : 8.00: 950 1st speed rpm 1000 s: (12.0) Rack travel in m: 14.75...14.85 : 750 2nd speed rpm Rack travel in m: 14.40...14.60 **BREAKAWAY** 3rd speed rpm : 700 Rack travel in m: 14.10...14.30 1st version 4th speed rpm : 650 1mm rack travel less than Rack travel in m: 13.90...14.10 5th speed rpm : 550 full load rack tr: 13.80 Rack travel in m: 13.85...14.05 Speed rpm : 990...1000 Aneroid/Altitude STARTING FUEL DELIVERY

Compensator Test

Remarks:

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 10.93 Test oil : ISO-4113

Combination no. : 0 402 648 953

Injection pump

Pump designation : PE8P120A320LS7859 EP type number : 0 412 628 869

Governor

Governor design. : RQV300...950PA1033

-10

Governer no. : 0 421 814 040

: 0230749702 Cust. part no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke ma : 5.20...5.3C

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Firing order : 4-1

: 0-45-90-135-180-225-Phasina

270-315

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 4.90...5.50

Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.09...1.49 travel mm

2nd speed rpm : 567

travel mm : 4.41...4.91

3rd speed rpm : 617

travel mm : 4.98...5.48

4th speed nom : 780

: 6.06...6.56 travel mm

: 1009 5th speed rpm

travel mm : 8.40...8.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1050 Speed Rack travel in mm : 11.30...13.90 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 550 Aneroid pressure h: 1000 bel.quantity : 244.0...246.0 1000 : (241.0...249.0) cm3 : 6.00Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 117...125 Testing: 1st rack travel in: 12.75 Speed rpm : 990...1000 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1200 Speed ripm : 0.00...1.50LOW IDLE 1 Control Lever position degrees: 82...90 Testing: Speed **FDID** : 200 Minimum rack trave: 8.00 : 300 rpm Rack travel in mm : 5.10...5.30 Rack travel in mm: 2.00 rpm : 380...420 Speed CONSTANT REGULATION rpm : 300...400 Speed Aneroid/Altitude Compensator Test 1st version Settina Speed : 400 rpm Pressure hPa : 550 : 13.05...13.15 Rack travel mm Measurement 1/min: 400 Speed

3rd pressure hPa : -Rack travel in m: 9.45...9.75 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 950 Del.quantity cm3/ : 233.0...237.0 1000 s: (230.0...240.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 550 : 400 Speed rpm Del.quantity cm3/: 207.0...210.0 1000 s: (204.0...213.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.75 Speed rpm : 990...1000 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Remarks: :

1st pressure hPa : 1000

2nd pressure hPa : 250

Rack travel in m: 13.70...13.80

Rack travel in m: 10.90...11.10

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 957

Injection pump

Pump designation : PE8P120A320LS7863 EP type number : 0 412 628 874

Governor

Governor design. : RQV300...950PA1056-2

K

Governer no. : 0 421 815 382

Cust. part no. : 0240743202

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 95...115

Test nozzle holder

assembly : 1 688 901 105

Openina |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm: 14.00...15.00 Firing order: 8-7-2-6-3-5-

Firing order : 4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 28.1...28.3

100 s: (27.8...28.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.48...1.78

2nd speed rpm : 350

travel mm : 2.31...2.81

3rd speed rpm : 400

travel mm : 2.85...3.35

4th speed rpm : 790

travel mm : 4.75...5.25

5th speed rpm : 1006

travel mm : 7.30...7.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1160 Speed Rack travel in mm : 12.50...15.10 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed mpm : 950 Ameroid pressure h: 1200 : 281.0...283.0 Del.quantity 1000 : (278.0...286.0) Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 107.0...115.0 Testina: 1st rack travel in: 13.80 rom : 990...1000 Speed 2nd rack travel in: 4.00 Speed rpm : 1090...1120 4th rack travel in: 1250 Speed r_{1000} : 0.00...1.50LOW IDLE 1 Control lever position degrees: 70.0...78.0 Setting point w/out bumper spring : 300 rom Rack travel in mm: 5.20 Testing: Speed : 200 rom Minimum rack trave: 7.30 Speed rpm : 300 Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 950 Rack travel in m: 14.75...14.85 2nd speed rpm : 850 Rack travel in m: 14.90...15.10 3rd speed rpm : 750 Rack travel in m: 14.45...14.55 4th speed rpm : 650 Rack travel in m: 13.90...14.10 5th speed rpm : 550 Rack travel in m: 13.85...14.05 Aneroid/Altitude Compensator Test

1st version Setting Speed rpm : 850 hPa : 500 Pressure Rack travel mm : 12.00...12.20 Measurement 1/min: 850 Speed 1st pressure hPa : 1200 Rack travel in m: 14.90...15.10 2nd pressure hPa : 150 Rack travel in m: 8.60...9.00 3rd pressure hPa : -Rack travel in m: 7.80...8.10 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 750 Speed rom Del.quantity cm3/: 275.0...279.0 1000 s: (272.0...282.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1200 : 550 Speed וווכרו Del.quantity cm3/: 265.0...271.0 1000 s: (262.0...274.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 500 Speed rpm : 400 Del.quantity cm3/: 192.5...195.5 1000 s: (189.5...198.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.80 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Remarks:

Note remarks

Test sheet : 04.94 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 970

Injection pump

Pump designation : PE8P120A32DLS7863 EP type number : 0 412 628 874

Covernor

Governor design. : RQV300...950PA1108K

: 0 421 815 369 Governer no.

Cust. part no. : 0240748402

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

1st version kW : 370.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 14.00...15.00 : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 14.75...14.85

Del.quantity cm3/: 28.1...28.3

100 s: (27.8...28.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.37...1.67 travel mm

rpm : 318 2nd speed

travel mm : 1.55...2.05

3rd speed rpm 368

2.25...2.75 travel mm

4th speed rpm : 730

: 5.94...6.46 travel mm

: 1008 5th speed rpm

travel mm : 9.63...10.03

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170 Speed

Rack travel in mm : 12.50...15.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Rack travel mm : 12.00...12.20 Speed rpm : 950 Aneroid pressure h: 1200 Measurement : 281.0...283.0 Del.quantity 1/min: 850 Speed 1000 : (278.0...286.0) cm3 Spread : 6.00 1st pressure hPa : 1200 1000 : (9.00) Rack travel in m: 14.90...15.10 2nd pressure hPa : 150 RATED SPEED Rack travel in m: 8.60...9.00 3rd pressure hPa : -1st version Rack travel in m: 7.80...8.10 Control lever position degrees: 117.0...125.0 START CUT-OUT Testing: Speed 1/min: 220 (240) 1st rack travel in: 13.80 rpm : 990...1000 Speed FUEL DELIVERY CHARACTERISTICS 2nd rack travel in: 4.00 : 1080...1110 Speed rpm 4th rack travel in: 1250 1st version Speed rpm : 0.00...1.50Aneroid pressure h: 1200 Speed rpm : 750 LOW IDLE 1 Del.quantity cm3/: 275.0...279.0 1000 s: (272.0...282.0) Control lever position degrees: 70.0...78.0 Spread cm3 : 8.00Setting point w/out bumper spring 1000 s: (12.0) : 300 Speed וווסרו Aneroid pressure h: 1200 Speed rpm : 550
Del.quantity cm3/ : 265.0...271.0
1000 s: (262.0...274.0) Rack travel in mm: 5.20 Testing: Speed : 200 rom Spread cm3 : 8.00Minimum rack trave: 7.30 1000 s: (12.0) rpm : 300 Aneroid pressure h: 500 Rack travel in mm : 5.10...5.30 Speed rpm : 400 Del.quantity cm3/: 192.5...195.5 1000 s: (189.5...198.5) CONSTANT REGULATION Speed rom : 300...500 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 TORQUE CONTROL 1000 s: (129.0...137.0) Dimension a mm Torque control curve - 1st version Spread cm3 : 8.00 rpm : 950 1st speed 1000 s: (12.0) Rack travel in m: 14.75...14.85 2nd speed חכרו : 850 Rack travel in m: 14.90...15.10 **BREAKAWAY** 3rd speed rpm : 750 Rack travel in m: 14.40...14.60 1st version 4th speed : 650 rom 1mm rack travel less than Rack travel in m: 13.90...14.10 rpm : 550 5th speed full load rack tr: 13.80 Rack travel in m: 13.85...14.05 Speed rpm : 990...1000 Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test rpm : 100 Speed 1st version Del.quantity cm3/: 120.0...140.0 Setting 1000 s: (116.0...144.0) Speed : 850 rpm Rack travel in mm : 11.40...12.20 hPa : 500 Pressure

Remarks:

Note remarks

Test sheet : MB : 04.94

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 975

Injection pump

Pump designation : PE8P120A320LS7840-1

EP type number

: 0 412 628 862

Governor

Governor design. : RQV350...950PA1123

Governer no.

: 0 421 814 085

Cust. part no.

: 0230747102

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: OM442 A

1st version kW

: 250.0

Rated speed

: 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 80...100

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.30 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 13.25...13.35

Del.quantity cm3/: 21.0...21.2

100 s: (20.7...21.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm: 350

Rack travel in mm : 5.40...6.00

Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.63...1.93

2nd speed rpm : 370

travel mm : 1.75...2.25

3rd speed rpm : 420

travel mm : 2.29...2.79

4th speed rpm : 995

travel mm : 9.21...9.61

5th speed rpm : 1200

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1090 Speed

Rack travel in mm : 11.00...13.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950 Aneroid pressure h: 1200

Del.quantity : 210.0...215.0)

cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 98.0...106.0

Testina:

1st rack travel in: 12.30 rpm : 990...1000 Speed 2nd rack travel in: 4.00

rpm : 1055...1085 Speed

4th rack travel in: 1200

Speed riom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 65.0...73.0 Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.7

Testing:

Speed : 250 mom . Minimum rack trave: 9.10 rpm : 350

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 370...490 Speed

Aneroid/Altitude Compensator Test

1st version

Measurement

Speed 1/min: 500

1st pressure hPa : 700

Rack travel in m: 12.80...13.00

2nd pressure hPa : 350

Rack travel in m: 11.45...11.55

3rd pressure hPa : -

Rack travel in m: 11.95...11.25

START CUT-OUT

Speed 1/min: 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Spread

Aneroid pressure h: 1200 : 700 Speed וחסרו

Del.quantity cm3/: 208.0...212.0 1000 s: (205.0...215.0)

cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 136.0...138.0 1000 s: (133.0...141.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

rbm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 195.0...225.0

:

1000 s: (191.0...229.0)

Remarks:

H26

Note remarks

Test sheet : 04.94 Edition : 10.92 Replaces Test oil : ISO-4113

: 0 402 678 820 Combination no.

Injection pump

Pump designation: PE8P120A320LS7823-1 EP type number : 0 412 628 872

Governor

: RSV350...1050P0A535 Governor design.

: 0 421 833 393 Governer no.

: 0240742402 Cust, part no.

Customer-spec, information

Customer : MERCEDES-BENZ

: 0M442LA Engine

1st version kW : 362.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order

: 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 3502nd speed

Rack travel in mm : 4.80...5.40

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4)

cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 900

: 234.0...237.0 1000 : (231.0...240.0) Del.quantity

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 90.0...98.0 Testing: 1st rack travel in: 13.40 rpm : 1070...1079 Speed 2nd rack travel in: 4.00 rpm : 1135...1152 Speed 4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 64.0...72.0 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 5.1 Testina: rpm : 100 Speed Minimum rack trave: 19.50 Speed : 350 rpm Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 Speed rpm : 360...420 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 14.40...14.60 2nd speed rpm : 950 Rack travel in m: 14.90...15.10 3rd speed rpm : 700 Rack travel in m: 15.40...15.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 900 : 13.70...13.80 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 350 Rack travel in m: 11.30...11.40 2nd pressure hPa : 1050 Rack travel in m: 13.90...14.00 3rd pressure hPa : 500 Rack travel in m: 12.85...13.05 4th pressure hPa : 1250 Rack travel in m: 14.75...14.95

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed rpm : 1030 Del.quantity cm3/: 253.0...256.0 1000 s: (250.0...259.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1600 Speed : 800 rpm Del.quantity cm3/: 271.0...274.0 1000 s: (268.0...277.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: : 500 Speed rpm Del.quantity cm3/: 141.0...143.0 1000 s: (138.0...146.0) cm3 : 8.00Spread 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than

full load rack tr: 13.40 Speed rpm : 1070...1079

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0

1000 s: (236.0., 264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 05.94 Replaces : 02.94 Test oil : ISO-4113 Combination no. : 0 402 678 823 Injection pump Pump designation : PE8P120A320LS7801-2 EP type number : 0 412 628 825 Governor Governor design. : RSV550...850P0A574 : 0 421 833 430 Governer no. Customer-spec, information Customer · MR : 0M442LA Engine 1st version kW : 302.0 : 1700 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Openina pressure, bar : 207...210 Test Lines : 1 680 750 075 Cutside diameter x Wall thickness x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.20...5.30 : (4.65...5.85) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order Phasing : 0-45-90-135-180-225-270-315 Tolerance + - * : 0.30 (0.75) Time to cyl. no. : 8 BASIC SETTING 1st speed rpm: 830 Rack travel in mm : 15.30...15.40 Del.quantity cm3/: 23.0...23.2 100 s: (22,7...23.5) cm3 : 0.6Spread 100 s: (0.9) 2nd speed rpm : 550 Rack travel in mm : 4.30...4.90 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Spread cm3 : 0.8 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 830 Aneroid pressure h: 1000 Del.quantity : 250.0...235.0) Spread : 6.00 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 82.0...90.0 Testing: 1st rack travel in: 14.35 rpm : 890...895 Speed

2nd rack travel in: 4.00

4th rack travel in: 1050

rpm -

Speed

: 955...968

J01

: 0.30...1.40 Speed rom LOW IDLE 1

Control lever

position degrees: 70.0...78.0 Setting point w/out bumper spring

rpm : 550 Rack travel in mm: 4.60

Testing:

Speed : 100 rom Minimum rack trave: 19.50 грт : 550

Rack travel in mm : 4.50...4.70

Rack travel in mm: 2.00 Speed rom : 550...610

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

Aneroid/Altitude Compensator Test

1st version Settina

Speed rpm : 500 Pressure hPa : 1000

Rack travel mm : 15.30...15.40

Measurement

Speed 1/min: 500

1st pressure hPa : 450

Rack travel in m: 14.45...14.55

2nd pressure hPa : 250

Rack travel in m: 12.50...12.70

3rd pressure hPa : -

Rack travel in m: 11.35...11.65

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 830 Speed

Del.quantity cm3/: 230.0...232.0

1000 s: (227.0...235.0)

Spread cm3 : 6.001000 s: (9.0)

Aneroid pressure h: 1000 Speed : 600

rpm Del.quantity cm3/: 232.0...238.0

1000 s: (229.0...241.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 145.0...147.0

1000 s: (142.0...150.0)

Spread

cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.35

Speed rpm : 890...895

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0

1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 550

Rack travel in mm : 4.30 ... 4.90 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0)

Spread cm3 : 6.00

1000 s: (10.0)

Remarks:

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

Note remarks

Test sheet : MB Edition : 04.94

Replaces

Test oil : ISO-4113

Combination no. : 0 402 678 825

Injection pump

Pump designation: PE8P120A320LS7823-2

EP type number : 0 412 628 883

Governor

: RSV450...1050P0A541-Governor design.

: 0 421 833 444 Governer no.

Cust, part no. : 0250744202

Customer-spec, information

Customer : MERCEDES-BENZ

: 0M442LA Engine

1st version kW : 362.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 683 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.85...14.95

Del.quantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 450 2nd speed

Rack travel in mm : 4.30...4.90

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1030 Aneroid pressure h: 1600

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 86.0...94.0 Testing: 1st rack travel in: 13.90 rpm : 1070...1075 2nd rack travel in: 4.00 Speed rpm : 1115...1128 4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 65.0...73.0 Setting point w/out bumper spring rpm : 450 Rack travel in mm: 4.6 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 450 Speed Rack travel in mm: 4.50...4.70 Rack travel in mm : 2.00 rpm : 445...505 Speed SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 14.85...14.95 2nd speed rpm : 950 Rack travel in m: 14.95...15.05 3rd speed rpm : 750 Rack travel in m: 15.40...15.60 Aneroid/Altitude Compensator Test 1st version Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.45...10.75 2nd pressure hPa : 400 Rack travel in m: 11.30...11.40 3rd pressure hPa : 700 Rack travel in m: 14.05...14.25 4th pressure hPa : 1600 Rack travel in m: 15.30...15.50 FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1600

Speed rpm: 750

Del.quantity cm3/: 254.0...256.0

1000 s: (251.0...259.0)

Spread cm3: 8.00

1000 s: (12.0)

Aneroid pressure h:
Speed rpm: 500

Del.quantity cm3/: 150.0...152.0

1000 s: (147.0...155.0)

Spread cm3: 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.90 Speed rpm : 1070...1075

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

J04

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 09.92 Test oil : ISO-4113

Combination no. : 0 402 746 913

Injection pump

Pump designation : PES6P120A720LS7237-1

EP type number : 0 412 726 911

Governor

Governor design. : RQ300/1100PA1008-2

Governer no. : 0 421 801 713

Cust. part no. : 0200747802

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 hA

1st version kW : 184.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.65...13.75

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.60...6.20 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1400

Del.quantity : 198.0...200.0 1000 : (195.0...203.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.70 rpm : 1145...1161 2nd rack travel in: 4.00 rpm : 1245...1275 Speed 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Control Lever position degrees: 72.0...80.0 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.9 Testing: : 500 Speed rpm Minimum rack trave: 9.00 : 300 rom Rack travel in mm : 5.80...6.00 Rack travel in mm: 2.00 Speed rpm: : 340...380 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 mqn Pressure hPa : 11.95...12.25 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 600 Rack travel in m: 12.60...12.70 2nd pressure hPa : 800 Rack travel in m: 12.90...13.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm : 1100 Del.quantity cm3/ : 198.0...200.0 1000 s: (195.0...203.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 Speed : 800 rpm Del.quantity cm3/: 201.0...205.0 1000 s: (198.0...208.0)

cm3 : 8.00 1000 s: (12.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.70 Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Remarks:

Spread

Note remarks

Test sheet : MB : 04.94 Edition Replaces : 10.92 : ISO-4113 Test oil

Combination no. : 0 402 746 913x

Injection pump

Pump designation : PES6P120A720LS7237

-10

EP type number : 0 412 726 872

Governor

Governor design. : RQ300/1100PA1008-1

Governer no. : 0 421 801 592

Cust. part no. : 0200747802

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M447 hA

1st version kW : 184.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

: 0.30 (0.75) Tolerance + - *

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.65...13.75

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 6.20...6.80 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1400

: 198.0...200.0 Del.quantity

1000 : (195.0...203.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Testina:

1st rack travel in: 12.70 rpm : 1145...1161 Speed 2nd rack travel in: 4.00

rpm : 1220...1250 Speed 4th rack travel in: 1300

rom : 0.00...1.50Speed

LOW IDLE 1 Control lever

position degrees: 72.0...80.0 Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.5

Testina:

rpm : 200 Speed Minimum rack trave: 8.30 rpm : 300 Speed Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00

: 370...410 Speed r'on)

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed **m**q1 Pressure hPa : -

: 12.00...12.30 Rack travel mm

Measurement

1/min : 500Speed

1st pressure hPa : 600

Rack travel in m: 12.65...12.75 2nd pressure hPa : 800

Rack travel in m: 12.95...13.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 rpm : 800 Speed

Del.quantity cm3/: 201.0...205.0 1000 s: (198.0...208.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0)

cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1145...1161 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 60.0...80.0

1000 s: (56.0...84.0)

Rack travel in mm : 11.80...12.20

:

Remarks:

J08

Note remarks

Test sheet : MB Edition : 05.94

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 914

Injection pump

Pump designation : PES6P120A720LS7238-1

EP type number : 0 412 726 873

Governor

Governor design. : RQ300/1100PA1008-4

: 0 421 801 745 Governer no.

Cust. part no. : 0200748002

Customer-spec. information Customer : MB-NFZ

: 0M447 hLA Engine

1st version kW : 220.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.75...13.85

Del.quantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 6.20...6.80 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

mpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 600

: 205.0...207.0 Del.quantity

1000 : (202.0...210.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 94.0...102.0

Setting point:

Speed : 650 rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 13.30 rpm : 1145...1161 Speed

2nd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1 Control lever

position degrees: 69.0...77.0

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.5

Testing:

Speed מכן : 200 Minimum rack trave: 8.40 rpm : 300

Rack travel in mm : 6.20...6.80

Rack travel in mm : 2.00

rpm : 370...410 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 600 COM Pressure hPa : 600

: 13.75...13.85 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : 150 Rack travel in m: 11.65...11.75 2nd pressure hPa : 350 Rack travel in m: 13.10...13.30

3rd pressure hPa : 800

Rack travel in m: 13.55...13.65

4th pressure hPa : 950

Rack travel in m: 14.30...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 Speed rpm : 1100 Del.quantity cm3/: 221.0...224.0 1000 s: (218.0...227.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 140.0...142.0

1000 s: (137.0...145.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

:

Remarks:

Note remarks

Test sheet : MB Edition : 04.94 : 04.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 916

Injection pump

Pump designation: PES6P120A720LS7237

-11

EP type number : 0 412 726 911

Governor

Governor design. : RQ300/1100PA1010-2

Governer no. : 0 421 801 714

Cust. part no. : 0200747902

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 hA

: 184.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed mon : 1100

Rack travel in mm : 13.65...13.75

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 6.20...6.80

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

: 198.0...200.0 1000 : (195.0...203.0) Del.quantity

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.70

rpm : 1145...1161 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1

Control Lever

position degrees: 72.0...80.0 Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.9

Testing:

Speed FIDM : 200 Minimum rack trave: 9.00 rpm : 300 Speed

Rack travel in mm : 5.80...6.00

Rack travel in mm : 2.00

Speed rpm : 355...395

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm Pressure hPa : 600

Rack travel mm : 12.65...12.75

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.00...12.30

2nd pressure hPa : 800

Rack travel in m: 12.95...13.15

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Speed rpm : 800 Del.quantity cm3/: 201.0...205.0

1000 s: (198.0...208.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 144.0...146.0

1000 s: (141.0...149.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1145...1161 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

J12

Note remarks

Test sheet : MB : 04.94 Edition Reolaces : 10.92 Test oil : ISO-4113

Combination no. : 0 402 746 916X

Injection pump

Pump designation : PES6P120A720LS7237-1

: 0 412 726 872 EP type number

Governor

Governor design. : RQ300/1100PA1010 Governer no. : 0 421 801 596

Cust. part no. : 0200747902

Customer-spec. information

Customer : MERCEDES-BENZ

Eraine : OM447 hA

1st version kW : 184.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

mpm : 1100 1st speed

Rack travel in mm : 13.65...13.75

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 6.20...6.80 Del. quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: 108...110 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1400

: 198.0...200.0 Del.quantity

1000 : (195.0...203.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 95.0...103.0

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0

Testina:

1st rack travel in: 12.70

rpm : 1145...1161 Speed

2nd rack travel in: 4.00

rpm : 1220...1250 Speed 4th rack travel in: 1300

rpm : 0.00...1.50Speed

LOW IDLE 1 Control lever

position degrees: 72.0...80.0 Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.5

Testing:

Speed rpm : 200 Minimum rack trave: 8.30 Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rom : 370...410

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 ron Pressure hPa : -

: 12.00...12.30 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : 600

Rack travel in m: 12.65...12.75

2nd pressure hPa : 800

Rack travel in m: 12.95...13.15

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Speed : 800 **L**DW

Del.quantity cm3/: 201.0...205.0

1000 s: (198.0...208.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -Speed

: 500 (IDII)

Del.quantity cm3/: 144.0...146.0

1000 s: (141.0...149.0)

cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1145...1161 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

.

Remarks:

Note remarks

Test sheet : MB : 04.94 Edition Replaces : 04.92 Test oil : ISO-4113

Combination no. : 0 402 746 919

Injection pump

: PES6P120A720LS7237 Pump designation

-11

EP type number : 0 412 726 911

Governor

Governor design. : RQ300/1100PA1013-4

: 0 421 801 711 Governer no.

Cust. part no. : 0220743402

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 hA

1st version kW : 184.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-2-4-1-5-3

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 13.75...13.85

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 6.20...6.80 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1400

Del.quantity : 203.0...205.0

1000 : (200.0...208.0)

Spread : 5.00 cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 92.0...100.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.80 rpm : 1145...1161 Speed 2nd rack travel in: 4.00 rom : 1225...1255 Speed 4th rack travel in: 1300 Speed man : 0.00...1.50 LOW IDLE 1 Control Lever position degrees: 69.0...77.0 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.9 Testing: Speed : 200 rpm Minimum rack trave: 9.00 rpm : 300 Speed Rack travel in mm : 5.80...6.00 Rack travel in mm: 2.00 Speed : 355...395 nom Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 600 Pressure : 12.75...12.85 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 950 Rack travel in m: 13.45...13.65 2nd pressure hPa : --Rack travel in m: 12.00...12.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 205.0...209.0 1000 s: (202.0...212.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.80 Speed rpm : 1145...1161 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) Remarks:

J16

Spread

Speed

1st version

Aneroid pressure h: 1700

Aneroid pressure h: 1400

rpm

Speed rpm : 1400 Del.quantity cm3/ : 203.0...205.0

cm3 : 5.00

1000 s: (9.0)

: 800

1000 s: (200.0...208.0)

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 12.92 : ISO-4113 Test oil

Combination no. : 0 402 746 919%

Injection pump

Pump designation : PES6P120A720LS7237

-10

EP type number : 0 412 726 872

Governor

Governor design. : RQ300/1100PA1013-1

: 0 421 801 603 Governer no.

Cust. part no. : 0220743402

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M447 hA

1st version kW : 184.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2,50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)
Rack travel in mm : 20.00...21.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.75...13.85

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 6.20...6.80 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1400

: 203.0...205.0 Del.quantity 1000 : (200.0...208.0)

Spread : 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 92.0...100.0

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.80

rpm : 1145...1161 Speed

2nd rack travel in: 4.00

Speed rpm : 1220...1250 4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1 Control lever

position degrees: 69.0...77.0 Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 6.5

Testing:

Speed rpm : 200 Minimum rack trave: 8.30 rpm : 300 Speed

Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00

Speed rpm : 370...410

Aneroid/Altitude Compensator Test

1st version

Settina

Speed (DIII) : 500

Pressure hPa : -

Rack travel mm : 12.00...12.30

Measurement

1/min: 500 Speed

1st pressure hPa : 600

Rack travel in m: 12.75...12.85 2nd pressure hPa : 950

Rack travel in m: 13.45...13.65

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

: 800 Speed COM

Del.quantity cm3/ : 205.0...209.0 1000 s: (202.0...212.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 144.0...146.0

1000 s: (141.0...149.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0

1000 s: (195.0...224.0)

Remarks:

J18

Note remarks

Test sheet : MB : 05.94 Edition Replaces : 02.92 : ISO-4113 Test oil

: 0 402 746 923 Combination no.

Injection pump

Pump designation : PES6P120A720LS7237

-11

EP type number : 0 412 726 911

Governor

Governor design. : RQ300/1100PA1013-5

: 0 421 801 712 Governer no.

Cust. part no. : 0220743502

Customer-spec. information

: MERCEDES-BENZ Customer

: OM447 hA Engine

: 184.0 1st version kw : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 120...140

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasina

Tolerance + - * : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.65...13.75

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 5.60...6.20 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1400

Del.quantity : 170.0...203.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 95.0...103.0

Setting point: Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.70 Speed rpm : 1145...1161

2nd rack travel in: 4.00

rpm : 1245...1275 Speed 4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1 Control lever

position degrees: 72.0...80.0 Setting point w/out bumper spring

nom : 300 Speed Rack travel in mm: 5.9

Testing:

Speed rpm : 200 Minimum rack trave: 9.00 Speed rpm : 300 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00

rpm : 355...395 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rom : 500 Pressure hPa : -

Rack travel mm : 12.00...12.30

Measurement

1/min : 500 Speed

1st pressure hPa : 600

Rack travel in m: 12.65...12.75

2nd pressure hPa : 800

Rack travel in m: 12.95...13.05

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 Speed rpm : 1100 Del.quantity cm3/: 198.0...200.0

1000 s: (195.0...203.0)

cm3 : 5.00Spread 1000 s: (9.0)

Aneroid pressure h: 1400

Speed rpm : 800 Del.quantity cm3/: 201.0...205.0

1000 s: (198.0...208.0)

cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 144.0...146.0 1000 s: (141.0...149.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.70

rpm : 1145...1161 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 200.0...220.0

:

1000 s: (196.0...224.0)

Remarks:

Note remarks

Test sheet : 05.94 Edition Replaces : 02.94 Test oil : ISO-4113

Combination no. : 0 402 746 923X

Injection pump

Pump designation : PES6P120A720LS7237-1

EP type number : 0 412 726 872

Governor

Governor design. : RQ300/1100PA1013-2

Governer no. : 0 421 801 611

: 0220743502 Cust. part no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M447 hA

1st version kW : 184.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 120...140

Test rozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm: 13.65...13.75

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 6.20...6.80 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1400

: 198.0...200.0 Del.quantity

1000 : (195.0...203.0)

cm3 : 5.00Spread

1000 : (9.00)

RATED SPEED

15% version Control Lever

position degrees: 95.0...103.0

Setting point:

Speed rpm Rack travel in mm: 20.0

Testina:

1st rack travel in: 12.70

rpm : 1145...1161 Speed

2nd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1 Control lever

position degrees: 72.0...80.0

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 6.50

Testing:

Speed rpm : 200 Minimum rack trave: 8.30

Speed rpm : 300 Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00 rpm : 370...410 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm

Pressure hPa : -Rack travel mm : 12.00...12.30

Measurement

1/min: 500 Speed

1st pressure hPa : 600

Rack travel in m: 12.65...12.75

2nd pressure hPa : 800

Rack travel in m: 12.85...13.05

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 Speed rpm : 800

Del.quantity cm3/: 201.0...205.0

1000 s: (198.0...208.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 144.0...146.0 1000 s: {141.0...149.0}

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

Note remarks

Test sheet Edition

: PER : 14.02.94

Replaces

Test oil

: ISO-4113

Injection pump

Pump designation: PES6MW100/720/3RS151

EP type number

: 0 413 206 018

Governor

Governor design. : RQV325...1300MW133-1

Governer no.

: 0 420 083 984

Customer-spec, information Customer

: PERKINS

Engine

: 18017

1st version kw

: 134.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 688 901 101

Openina |

pressure, bar : 207...210

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.95...5.05 Prestroke mm

: (4.90...5.10)

Rack travel in mm : 13.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.3)

cm3 : 0.4Scread

100 s: (0.7)

rpm : 325.0 2nd speed

Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 2.1...2.5 100 s: (1.9...2.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.45...1.95 travel mm

2nd speed rpm : 361

: 2.09...2.59 travel mm

3rd speed rpm : 500

: 3.67...4.17 travel mm

4th speed rpm: 881

: 6.21...6.71 travel mm

5th speed rpm : 1355

: 9.98...10.48 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1380 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1300

Aneroid pressure h: 900

Del.quantity : 138.0...140.0 1000 : (135.0...143.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testina:

1st rack travel in: 13.30

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

rpm : 1460...1490 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm: 5.8

Testina:

Speed : 200 rpm Minimum rack trave: 8.00 rpm : 325 Speed

Rack travel in mm : 5.40...5.60

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1300 rpm Pressure hPa : 900

Rack travel mm : 14.30...14.40

Measurement

1/min : 1300 Speed

ist pressure hPa : -

Rack travel in m: 9.3...9.5

2nd pressure hPa : 250

Rack travel in m: 10.25...10.35

3rd pressure hPa : 400

Rack travel in m: 13.05...13.35

START CUT-OUT

1/min: 240 (270) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1300

Del.quantity cm3/: 138.0...143.0 1000 s: (135.0...143.0)

cm3 : 4.00Spread

1000 s: (7.50)

Aneroid pressure h: 900 : 800 Speed rom

Del.quantity cm3/: 135.0...139.0

1000 s: (132.0...142.0)

cm3 : 6.00Spread

1000 s: (9.00)

Aneroid pressure h: 900 Speed rpm : 500

Del.quantity cm3/: 106.0...110.0 1000 s: (103.0...113.0)

Aneroid pressure h: -Speed

rpm : 500 Del.quantity cm3/ : 71.0...73.0 1000 s: (69.0...75.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quartity cm3/: 78.0...92.0

1000 s: (75.0...95.0)

LOW IDLE

rpm

Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 21.0...25.0

1000 s: (18.5...27.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°

before start of delivery of cylinder 1

Note remarks

Test sheet

Edition

: 15.02.94

Replaces Test oil

: ISO-4113

Combination no.

: 0 403 244 032

Injection pump

Pump designation : PES4MW100/720RS1519-

EP type number

: 0 413 204 017

Governor

Governor design. : RQV300...1300Mw132-1

Governer no.

: 0 420 083 292

Customer-spec, information Customer

: MB

Engine

: 0M364LA

1st version kW

: 103.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 688 901 101 assembly

Opening

pressure, bar : 207...210

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 4.50...4.60

: (4.45...4.65)

Rack travel in mm : 21.00

Firing order

: 1-3-4-2

Phasing

: 0-90-180-270

Tolerance + - *

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1300

Rack travel in mm : 13.85...13.95

Del.quantity cm3/: 12.5...12.7

100 s: (12.2...13.0)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed rpm: 300.0 Rack travel in mm: 3.8...4.0 Del.quantity cm3/: 1.0...1.4

100 s: (0.75...1.65)

Spread

cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.66...1.16 travel mm

2nd speed

rpm : 629

travel mm

3rd speed

: 2.9...3.4 rpm : 820

travel mm

: 3.86...4.34 rpm : 1150

4th speed travel mn

: 5.7...6.2

5th speed

rpm : 1354

: 7.52...8.02 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1510

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1300

Aneroid pressure h: 1400

Del.quantity

: 125.0...127.0 1000 : (122.0...130.0)

Spread

cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testina:

1st rack travel in: 12.90

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

Speed : 1450...1480 **COM**

4th rack travel in: 1550

Speed nom : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 67...75

Testina:

Speed : 200 rpm

Minimum rack trave: 4.50 Speed rpm : 300

Rack travel in mm: 3.8...4.0

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa : 1400

: 13.85...13.95 Rack travel mm

Measurement

Speed 1/m!n:500

1st pressure hPa : -

Rack travel in m: 11.0...11.2
2nd pressure hPa : 550
Rack travel in m: 11.50...11.70
3rd pressure hPa : 800

Rack travel in m: 13.0...13.2

START CUT-OUT

Speed 1/min: 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 Speed : 1300 rpm

Del.quantity cm3/: 125.0...127.0 1000 s: (122.0...130.0)

cm3 : 5.00 Spread

1000 s: (7.50)

Aneroid pressure h: 1400

Speed rpm : 750
Del.quantity cm3/ : 122.0...126.0
1000 s: (119.0...129.0)
Spread cm3 : 6.00

1000 s: (9.00)

Aneroid pressure h: 1400

Speed rpm : 600 Del.quantity cm3/ : 124.0...128.0

1000 s: (121.0...131.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 66.0...68.0 1000 s: (64.0...70.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...145.0

1000 s: (132.0...148.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm: 3.8...4.0

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50 1000 s: (5.50)

Remarks:

J26

Note remarks

Test sheet

Edition : 15.02.94

Replaces

: ISO-4113 Test oil

: 0 403 244 032 Combination no.

Injection pump

Pump designation : PES4MW100/720RS1519-

: 0 413 204 017 EP type number

Governor

Governor design. : RQV300...1300Mw132-1

: 0 420 083 292 Governer no.

Customer-spec. information

Customer : MB

Engine : 0M364LA

1st version kW : 103.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 688 901 101 assembly

Opening.

pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.50...4.60 Prestroke mm

: (4.45...4.65)

Rack travel in mm: 21.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 13.85...13.95

Del.quantity cm3/: 12.5...12.7

100 s: (12.2...13.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 3.8...4.0 Del.quantity cm3/ : 1.0...1.4

100 s: (0.75...1.65)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.66...1.16

2nd speed rpm : 629

travel mm : 2.9...3.4

3rd speed rpm : 820

: 3.84...4.34 travel mm

rpm : 1150 : 5.7...6.2 4th speed travel mm

rpm : 1354 5th speed

: 7.52...8.02 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1300 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1400

Del.quantity : 125.0...130.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED 1st version Control lever position degrees: 112...120 Testing: 1st rack travel in: 12.9 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1450...1480 Speed 4th rack travel in: 1550 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 67...75 Testing: Speed nom : 200 Minimum rack trave: 4.50 Speed rpm ; 300 Rack travel in mm : 3.8...4.0 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 1400 Pressure : 13.85...13.95 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.0...11.2 2nd pressure hPa : 550 Rack travel in m: 11.5...11.7 3rd pressure hPa : 800 Rack travel in m: 13.0...13.2 START CUT-OUT 1/min: 200 (220) Speed FUEL DELIVERY CHARACTERISTICS

Speed MOL Del.quantity cm3/: 122.0...126.0 1000 s: (119.0...129.0) Spread cm3 : 6.00 1000 s: (9.00) Aneroid pressure h: 1400 Speed rpm : 600 Del.quantity cm3/ : 124.0...128.0 1000 s: (121.0...131.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 66.0...68.0 1000 s: (64.0...70.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm -: 100 Del.quantity cm3/: 135.0...145.0 1000 s: (137.0...148.0) LOW IDLE Speed rpm : 300 Rack travel in mm: 3.8...4.0 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks:

1st version

Speed

Spread

Aneroid pressure h: 1400

Aneroid pressure h: 1400

COM

: 1300

Del.quantity cm3/ : 125.0...127.0 1000 s: (122.0...130.0) cm3 : 4.00

1000 s: (7.50)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : 15.02.94 Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 244 034 Injection pump : PES4MW100/720RS1519-Pump designation : 0 413 204 018 EP type number Governor Gasternor design. : RQV300...1300MW132-3 : 0 420 083 296 Governer no. Customer-spec. information Customer : MB Engine : 0M364LA 1st version kW : 77.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 688 901 101 assembly Openina pressure, bar : 207...210 Test Lines : 1 680 750 089 Outside diameter x Wall thickness : 8.00x2.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Rack travel in mm : 21.00 Firing order : 1- 3- 4- 2 Phasing : 0-90-180-270 : 0.50 (0.75) Tolerance + - ° BASIC SETTING 1st speed rom : 1300Rack travel in mm : 11.5...11.6 Del.quantity cm3/: 9.4...9.6 100 s: (9.2...9.8) Spread cm3 : 0.3100 s: (0.6) 2nd speed npm : 300.0Rack travel in mm: 3.9...4.1 Del.quantity cm3/ : 1.0...1.4 100 s: (0.75...1.65) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 travel mm : 0.66...1.16 2nd speed rpm : 629 travel mm : 2.9...3.4 3rd speed rpm : 800 : 3.75...4.25 rpm : 1140 travel mm 4th speed : 5.63...6.13 travel mm 5th speed : 1345 rpm travel mm : 7.39...7.89 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1400 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 1000 : 94.0...96.0 Del.quantity 1000 : (92.0...98.0) Spread cm3 : 3.50

1000 : (6.00)

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

: 4.50...4.60

: (4.45...4.65)

RATED SPEED

1st version Control lever

position degrees: 106...114

Testing:

1st rack travel in: 10.5

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

rpm : 1420...1450 Speed

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 65...73

Testing:

Speed : 200 LDW.

Minimum rack trave: 4.50 Speed rpm : 300

Rack travel in mm: 3.9...4.1

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa : 1000

Rack travel mm : 11.5...11.6

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.6...10.8 2nd pressure hPa : 500 Rack travel in m: 11.0...11.2

START CUT-OUT

1/min : 200 (220) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1300 Del.quantity cm3/ : 94.0...96.0 1000 s: (92.0...98.0)

cm3 : 3.50 Spread

1000 s: (6.00)

Aneroid pressure h: 1000

Speed rpm : 750 Aneroid pressure h: -

Del.quantity cm3/: 85.5...88.5

cm3 : 5.00

1000 s: (7.00)

Speed rpm: 500 Del.quantity cm3/: 65.0...67.0

1000 s: (63.0...69.0)

1000 s: (83.0...91.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 125.0...135.0

1000 s: (122.0...138.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm: 3.9...4.1

Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.50)

:

Remarks:

Note remarks

Test sheet : MB

: 15.02.94 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 244 035

Injection pump

Pump designation : PES4MW100/720RS1519-

EP type number : 0 413 204 018

Governor

Governor design. : RQV300...1300MW132-3

: 0 420 083 296 Governer no.

Customer-spec, information

Customer : MB

: 0M364LA Engine

1st version kW : 77.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 688 901 101 assembly

Opening

pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60

: (4.45...4.65)

Rack travel in mm: 21.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

: 0.50 (0.75) Tolerance + - *

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 11.5...11.6

Del.quantity cm3/: 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 3.9...4.1 Del.quantity cm3/ : 1.0...1.4 100 s: (0.75...1.65)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.66...1.16

2nd speed rpm : 629

: 2.9...3.4 travel mm

3rd speed rpm : 800 travel mm

: 3.75...4.25 4th speed rpm : 1146

: 5.63...6.13 travel mm

rpm : 1345 5th speed

: 7.39...7.89 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

Del.quantity : 94.0...98.0) Spread

cm3 : 3.501000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 106...114

Testina:

1st rack travel in: 10.5

Speed rpm : 1340...1350

2nd rack travel in: 4.00

rpm : 1420...1450 Speed

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 65...73

Testing:

Speed rpm : 200 Minimum rack trave: 4.50

Speed rpm : 300 Rack travel in mm : 3.9...4.1

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa : 1000

Rack travel mm : 11.5...11.6

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.6...10.8

2nd pressure hPa : 500

Rack travel in m: 11.0...11.2

START CUT-OUT

Speed

1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1300 Del.quantity cm3/ : 94.0...96.0

1000 s: (92.0...98.0)

Spread cm3 : 3.50

1000 s: (6.00)

Aneroid pressure h: 1000

Speed rpm : 750

Del.quantity cm3/: 85.5...88.5 1000 s: (83.0...91.0)

cm3 : 5.00 Spread

1000 s: (7.00)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 65.0...67.0

1000 s: (63.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...135.0

1000 s: (122.0...138.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm: 3.9...4.1

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50 1000 s: (5.50)

.

Remarks:

Note remarks

Test sheet

Edition : 15.02.94

Replaces

Test oil : ISO-4113

Combination no. : 0 403 244 036

Injection pump

Pump designation : PES4MW100/720RS1519-

EP type number : 0 413 204 018

Governor

Governor design. : RQV300...1300MW132-5

Governer no. : 0 420 083 308

Customer-spec. information

Customer : MB

Engine : OM364LA

1st version kW : 77.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 688 901 101 assembly

Opening 1

pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60

: (4.45...4.65)

K05

Rack travel in mm: 21.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 11.5...11.6

Del.quantity cm3/: 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm: 3.9...4.1 Del.quantity cm3/: 1.0...1.4

100 s: (0.75...1.65)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 106...114

Testing:

1st rack travel in: 10.5

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

rpm : 1420...1450 Speed

4th rack travel in: 1550

Speed nom : 0.00...1.00

LOW IDLE 1 Control Lever position degrees: 65...73 Testing: Speed rpm : 200 Minimum rack trave: 4.50 Speed rpm : 300 Rack travel in mm : 3.9...4.1 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 **FPM** hPa : 1000 Pressure Rack travel mm : 11.5...11.6 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.6...10.8 2nd pressure hPa : 500 Rack travel in m: 11.0...11.2 START CUT-OUT Speed 1/min: 200 (220) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 1300 Del.quantity cm3/ : 94.0...96.0 1000 s: (92.0...98.0) Spread cm3 : 3.50 1000 s: (6.00) Aneroid pressure h: 1000 : 750 Speed MCT Del.quantity cm3/: 85.5...88.5 1000 s: (83.0...91.0) cm3 : 5.00Spread 1000 s: (7.00) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 65.0...67.0 1000 s: (63.0...69.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50

K06

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 125.0...135.0 1000 s: (122.0...138.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.9...4.1
Del.quantity cm3/ : 10.0...14.0

1000 s: (7.5...16.5) cm3 : 3.50 1000 s: (5.50)

Spread

Remarks:

Note remarks

Test sheet : MB

Edition : 15.02.94

Replaces

Test oil : ISO-4113

Combination no. : 0 403 244 037

Injection pump

Pump designation: PES4MW100/720RS1519-

: 0 413 204 017 EP type number

Governor

Governor design. : RQV300...1300Mw132-6

Governer no. : 0 420 083 309

Customer-spec. information

Customer : MB

: 0M364LA Engine

1st version kW : 103.0

Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 688 901 101

Opening |

pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60

: (4.45...4.65)

K07

Rack travel in mm : 21.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.85...13.95

Del.quantity cm3/: 12.5...12.7

100 s: (12.2...13.0)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.02nd speed

Rack travel in mm: 3.7...3.9

Del.quantity cm3/: 1.0...1.4

100 s: (0.75...1.65)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Arieroid pressure h: 1400

: 125.0...127.0 Del.quantity

1000 : (122.0...130.0)

: 4.0 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 112...120

Testing:

1st rack travel in: 12.9

Speed rpm: 1340...1350 2nd rack travel in: 4.00

Speed rpm : 1435...1465 4th rack travel in: 1550

Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever

position degrees: 67...75

Testing:

Speed rpm : 200 Minimum rack trave: 4.50 Speed rpm : 300 Rack travel in mm: 3.7...3.9

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : 1400

Rack travel mm : 13.85...13.95

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.7...10.9

2nd pressure hPa : 550

Rack travel in m: 11.5...11.7

3rd pressure hPa : 800

Rack travel in m: 13.0...13.2

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 rpm : 1300 Speed

Del.quantity cm3/: 125.0....127.0

1000 s: (122.0...130.0)

Spread cm3 : 4.0

1000 s: (7.50)

Aneroid pressure h: 1400 Speed : 750 MOCT

Del.quantity cm3/: 122.0...126.0

1000 s: (119.0...129.0)

Spread cm3 : 6.00

1000 s: (9.00)

Aneroid pressure h: 1400

Speed rpm : 600 Del.quantity cm3/ : 126.0...130.0 1000 s: (123.0...133.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 66.0...68.0

1000 s: (64.0...70.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.9

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

: 100 Speed COM

Del.quantity cm3/: 135.0...145.0 1000 s: (132.0...148.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.7...3.9

Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : 10.02.94 Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 246 034 Injection pump Pump designation : PES6MW100/720RS1517-EP type number : 0 413 206 019 Governor Governor design. : RQV300...1300MW132 : 0 420 083 291 Governer no. Customer-spec. information : MB-NFZ Customer : 0M366LA Engine 1st version kW : 177.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 688 901 101 Opening: : 207...210 pressure, bar Test Lines : 1 680 750 089 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values __ BEGINNING OF DELIVERY Test pressure, bar: 30...32 : 4.50...4.60 : (4.45...4.65)

Rack travel in mm : 21.00...0.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) BASIC SETTING 1st speed rom: 1300 Rack travel in mm : 14.10...14.20 Del.quantity cm3/: 12.8...13.0 100 s: (12.5...13.3) Spread cm3 : 0.4 100 s: (0.7) rpm : 300.02nd speed Rack travel in mm : 3.9...4.1 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 0.77...1.27 travel mm 2nd speed rpm : 490 travel mm : 2.0...2.5 rpm : 710 3rd speed travel mm : 2.78...3.28 rpm : 1100 4th speed : 4.51...5.01 travel mm : 1353 5th speed rpm : 6.45...6.95 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 1400 Del.quantity : 128.0...130.0 1000 : (125.0...133.0) : 4.00 Spread cm3 1000 : (7.50) RATED SPEED

Prestroke mm

Control lever position degrees: 116...124

1st version

Testina: 1st rack travel in: 13.10 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1475...1505 Speed 4th rack travel in: 1600 Speed rom : 0.00, ..., 1.00LOW IDLE 1 Control lever position degrees: 62...70 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 4.0 Testina: Speed Ppm : 200 Minimum rack trave: 5.00 rpm : 300 Rack travel in mm : 3.90...4.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 nom Pressure hPa : 1400 Rack travel mm : 14.10...14.20 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.00...10.20 2nd pressure hPa : 500 Rack travel in m: 10.60...10.80 3rd pressure hPa : 850 Rack travel in m: 13.10...13.30 START CUT-OUT Speed 1/min : 200 (220) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed : 1300 rpm Del.quantity cm3/: 128.0...130.0 1000 s: (125.0...133.0) cm3 : 4.00Spread 1000 s: (7.5)

Spread cm3 : 6.001000 s: (9.00) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 44.0...46.0 1000 s: (42.0...48.0)

BREAKAWAY

1st version imm rack travel less than

full load rack tr: 13.10 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...145.0 1000 s: (132.0...148.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.90...4.10 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Aneroid pressure h: 1400 Speed rpm : 750 Del.quantity cm3/ : 128.0...132.0 1000 s: (125.0...135.0)

Note remarks

Test sheet

: 15.02.94 Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 403 246 035

Injection pump

Pump designation : PES6MW100/720RS1517-

EP type number Governor

: 0 413 206 020

Governor design. : RQV300...1300Mw132-2

Governer no.

: 0 420 083 293

Customer

Customer-spec. information : MO-NFZ

Engine

: 0M366LA

1st version kW

: 125.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 688 901 101

Openina

pressure, bar

: 207...210

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant,

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm

: 4.50...4.60

: (4.45...4.65)

Rack travel in mm : 21.00...0.00 Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

Spread

nom: 1300

Rack travel in mm : 11.95...12.05

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 4.0...4.2 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.77...1.27

2nd speed rpm : 490

travel mm : 2.0...2.5

3rd speed rpm : 710

: 2.78...3.28 travel mm

rpm : 1100 4th speed

: 4.51...5.01 travel mm

: 1353 5th speed rpm

: 6.45...6.95 travel mm

FULL LOAD DELIV. AT FULL LCAD STOP

1st version

Speed

rpm : 1300

Aneroid pressure h: 1000

: 101.0...103.0

Del.quantity

1000 : (99.0...105.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 112...120

2nd rack travel in: 4.00 Speed rpm : 1455...1485 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring r_{com} : 300Rack travel in mm: 4.1 Testing: Speed rpm : 200 Minimum rack trave: 5.00 rpm : 300 Speed Rack travel in mm: 4.0...4.2 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 CDM. Pressure hPa : 1200 : 11.95...12.05 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 9.8...9.7 2nd pressure hPa : 150 Rack travel in m: 10.25...10.45 3rd pressure hPa : 300 Rack travel in m: 11.25...11.45 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 1300 Speed rpm Del.quantity cm3/: 101.0...103.0 1000 s: (99.0...105.0) Spread cm3 : 3.50 1000 s: (6.0) Aneroid pressure h: 1000 Speed rpm : 750
Del.quantity cm3/: 91.5...94.5
1000 s: (89.0...97.0) K12

Testing:

Speed

1st rack travel in: 11.0

rpm : 1340...1350

cm3 : 5.50 Spread 1000 s: (7.00) Aneroid pressure h: 1000 Speed mpm : 600 Del.quantity cm3/: 93.5...96.5 1000 s: (91.0...99.0) Aneroid pressure h: rpm : 500 Screed Del.quantity cm3/: 52.0...54.0 1000 s: (50.0...56.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.0 rom : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...120.0 1000 s: (107.0...123.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm: 4.0...4.2 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Note remarks

Test sheet

: MB

Edition

: 15.02.94

Replaces

Test oil

: ISO-4113

Combination no.

: 0 403 246 036

Injection pump

Pump designation : PES6MW100/720RS1517-

EP type number

: 0 413 206 019

Governor

Governor design. : RQV300...1300Mw132-4

Governer no.

: 0 420 083 299

Customer-spec, information Customer : MB-NFZ

Engine

: 0M366LA

1st version kW Rated speed

: 155.0 : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 688 901 101

Opening

pressure, bar

: 207...210

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 4.50...4.60

: (4.45...4.65)

Spread

100 s: (0.7) rpm : 300.0

cm3 : 0.4

rpm: 1300

Rack travel in mm : 13.45...13.55

Del.quantity cm3/: 11.8....12.0

Rack travel in mm : 21.00...0.00

Firing order

Tolerance + - *

BASIC SETTING

1st speed

Phasina

: 1-5-3-6-2-4

: 0-60-120-180-240-300

: 0.50 (0.75)

2nd speed Rack travel in mm : 3.9...4.1 Del.quantity cm3/ : 1.0...1.4 100 s: (0.7...1.6)

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.77...1.27 travel mm

rpm : 490 2nd speed

travel mm

: 2.0...2.5

rpm : 710 3rd speed

: 2.78...3.28 travel mm

rpm : 1100 4th speed

: 4.51...5.01 travel mm 5th speed rpm : 1353

travel mm : 6.45...6.95

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 114...122

Testina: 1st rack travel in: 12.5 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1470...1500 4th rack travel in: 1550 rom : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 4.0 Testing: Speed : 200 rom Minimum rack trave: 5.00 Speed rpm : 300 Rack travel in mm: 3.9...4.1 Aneroid/Altitude Compensator Test 1st version Setting Speed חכרו : 500 Pressure hPa : 1000 Rack travel mm : 13.45...13.55 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.1...10.3 2nd pressure hPa : 300 Rack travel in m: 10.7...10.9 3rd pressure hPa : 600 Rack travel in m: 12.5...12.7 START CUT-OUT Speed 1/min : 200 (220) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 1300 Del.quantity cm3/ : 118.0...120.0 1000 s: (116.0...122.0) cm3 : 3.50Spread 1000 s: (6.0) Aneroid pressure h: 1000 rpm : 750 Speed Del.quantity cm3/: 117.5...120.5 1000 s: (115.0...123.0)

Spread cm3 : 5.501000 s: (7.00) Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/: 117.5...120.5 1000 s: (115.0...123.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 50.0...52.0 1000 s: (48.0...54.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.5 Speed nom : 1340...1350 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 125.0...135.0 1000 s: (122.0...138.0) LOW IDLE Speed rpm Rack travel in mm: 3.9...4.1

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Note remarks

Test sheet

: 07.04.94 Edition

Replaces

Test oil : ISO-4113

Combination no.

: 0 403 276 005

Injection pump

Pump designation : PES6MW100/720RS1517-

EP type number

: 0 413 206 017

Governor

Governor design. : RSV350...1200Mw0A355

Governer no.

: 0 420 085 228

Cust. part no.

: 0250740102

Customer-spec, information

Customer

: MERCEDES-BENZ

Engine

: 0M 366 LA

1st version kW

: 100.0

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 4.5...4.6

: (4.45...4.65)

Rack travel in mm : 21.0

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-130-240-300

Tolerance + - *

: 0.50 (0.75)

BASIC SETTING

1st speed

Spread

rpm: 1200

Rack travel in mm : 11.0...11.1

Del.quantity cm3/: 9.4...9.6

100 s: (9.2...9.8)

cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed

Rack travel in mm : 3.2...3.4 Del.quantity cm3/ : 1.0...1.4

100 s: (0.8...1.6)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm: 0.3...0.9

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1200

Aneroid pressure h: 1000

: 94.0...96.0

Del.quantity

cm3

1000 : (92.0...98.0)

: 3.50

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 92...100

Setting point:

Speed

riom

Rack travel in mm: 0.65

Testina:

1st rack travel in: 10.0

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1305...1335 Speed

4th rack travel in: 1400 Speed rpm : 0.3...1.7

LOW IDLE 1

Control lever

position degrees: 62...70

Setting point w/out bumper spring

Rack travel in mm: 3.3 Speed rom Speed rpm : 350 Rack travel in mm : 3.2...3.4

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1000 Speed man! Pressure

Rack travel mm : 10.95...11.15

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.1...10.3

2nd pressure hPa : 300

Rack travel in m: 10.4...10.6

3rd pressure hPa : 380

Rack travel in m: 10.7...10.9

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 750 Speed

Del.quantity cm3/: 85.5...88.5

1000 s: (83.0...91.0)

cm3 : 5.5Spread

1000 s: (7.00)

Aneroid pressure h: -Aneroid pressure h: riom : 500 Speed

Del.quantity cm3/: 68.0...70.0

1000 s: (66.0...72.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.0

rpm : 1240...1250

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 90.0...100.0 1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm: 3.2...3.4 Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

cm3 : 3.50 Spread

1000 s: (5.00)

Remarks:

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

Note remarks

Test sheet

Edition

: 07.04.94

Replaces

Test oil

: ISO-4113

Combination no.

: 0 403 276 006

Injection pump

Pump designation : PES6MW100/720RS1517-

EP type number

: 0 413 206 017

Governor

Governor design.

: RSV350...1200Mw0A355

Governer no.

: 0 420 085 229

Cust, part no.

: 0250740202

Customer-spec, information

Customer

: MERCEDES-BENZ

Engine

: OM 366 LA

1st version kW

: 120.0

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar : 207...210

Test Lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.5...4.6 Prestroke mm : (4.45...4.65)

Rack travel in mm : 21.0

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.4...11.5

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

rom : 300.02nd speed Rack travel in mm: 3.2...3.4 Del.quantity cm3/: 1.0...1.4

100 s: (0.8...1.6) cm3 : 0.3

Spread

100 s: (0.5)

SUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm: 0.3...0.9

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1000

Del.quantity : 101.0...103.0 1000 : (99.0...105.0)

cm3 : 3.50 1000 : (6.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 92...100

Setting point:

Speed : 800 rpm

Rack travel in mm: 0.65

Testing:

1st rack travel in: 10.4

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1305...1335

4th rack travel in: 1400

rom : 0.3...1.7 Speed

LOW IDLE 1

Control Lever

position degrees: 62...70

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 3.3 rpm : 350 Speed

Rack travel in mm: 3.2...3.4

SET IDLE AUXILIARY SPRING

Rack travel in mm: 2.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed /'pm Pressure hPa : 1000

Rack travel mm : 11.35...11.55

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.55...9.75

2nd pressure hPa : 350

Rack travel in m: 9.9...10.1

3rd pressure hPa : 530

Rack travel in m: 10.9...11.1

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 750
Del.quantity cm3/ : 97.5...100.5
1000 s: (95.0...103.0)

Spread cm3 : 5.5

1000 s: (7.00)

Aneroid pressure h: -

Aneroid pressure h: -Speed

rpm : 500 Del.quantity cm3/: 62.0...64.0

1000 s: (60.0...66.0)

BREAKAWAY

K18

1st version

1mm rack travel less than

full load rack tr: 10.4

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 90.0...100.0

1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350
Rack travel in nm : 3.2...3.4
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

Note remarks

Test sheet : MB

Edition : 14.04.94

Replaces Test oil

: ISO-4113

Combination no. : 0 403 276 009

Injection pump

Pump designation: PES6MW100/720RS1517-

EP type number : 0 413 206 019

Governor

Governor design. : RSV350...1200Mw0A357

: 0 420 085 233 Governer no.

Cust. part no. : 0250740402

Customer-spec, information

Customer : MERCEDES-BENZ

: OM 366 LA Engine

: 155.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening |

pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.5...4.6

: (4.45...4.65)

Rack travel in mm : 21.0

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 14.0...14.1

Del.quantity cm3/: 12.7...12.9

100 s: (12.4...13.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 3.2...3.4 Del.quantity cm3/: 1.0...1.4

100 s: (0.8...1.6)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm: 0.3...0.9

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 1500

Del.quantity : 127.0...129.0 1000 : (124.0...132.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 92...100

Setting point:

rpm Rack travel in mm : 0.5 Testing:

1st rack travel in: 13.0

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1310...1340 4th rack travel in: 1400

rpm : 0.3...1.7 Speed

LOW IDLE 1 Control lever

position degrees: 62...70

Setting point w/out bumper spring

npm : 350 Rack travel in mm: 3.3

Testing:

Speed : 100 COM Minimum rack trave: 19.0 Speed rpm : 350 Rack travel in mm : 3.2...3.4

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 1500 Pressure

Rack travel mm : 14.0...14.1

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.45...9.65

2nd pressure hPa : 350

Rack travel in m: 10.4...10.6

3rd pressure hPa : 750

Rack travel in m: 12.9...13.1

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 : 750 Speed

rpm

Del.quantity cm3/: 128.0...132.0 1000 s: (125.0...135.0)

cm3 : 6.0

Spread 1000 s: (9.00)

Aneroid pressure h: -

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 42.0...44.0 1000 s: (40.0...46.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.0

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 140.0...150.0 1000 s: (137.0...153.0)

LOW IDLE

Speed rom

Rack travel in mm: 3.2...3.4 Del.quantity cm3/: 10.0...14.0

1900 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

Note remarks

Test sheet

Edition : 15.09.93

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 444 149

Injection pump

Pump designation : PES4MW100/720RS1151

: MB

EP type number : 0 413 404 104

Governor

Governor design. : RQV300...1300MW50-27

Governer no. : 0 420 083 273

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM364A

1st version kW : 79.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm: 10.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 10.8...10.9

Del.quantity cm3/: 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.5

Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6) Spread cm3 : 0.3

100 s; (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 1.2...1.6

2nd speed rpm : 500

travel mm : 2.7...3.3

3rd speed rpm : 1350

travel mm : 8.5...8.7

4th speed rpm : 1450 travel mm : 9.4...10.0

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Alleroid pressure ii: 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 110...118 Testina: 1st rack travel in: 9.8 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1420...1450 4th rack travel in: 1550 riom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 74...82 Testina: : 200 Speed FOM Minimum rack trave: 8.00 Speed MON : 300 Rack travel in mm : 6.3...6.5 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure Rack travel mm : 11.6...11.8 Measurement 1/min : 500Speed 1st pressure hPa : -Rack travel in m: 9.7...9.8 2nd pressure hPa : 200 Rack travel in m: 10.7...10.9 3rd pressure hPa : 300 Rack travel in m: 11.3...11.5 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 1300 Speed rpm Del.quantity cm3/: 82.0...84.0 1000 s: (80.0...86.0) cm3 : 3.50 Spread 1000 s: (6.00) Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm3/ : 75.0...78.0 1000 s: (72.5...80.5)

Spread cm3 : 5.00 1000 s: (7.00) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 46.0...48.0 1000 s: (44.0...50.0)

EREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.8 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.3...6.5
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50

spread cms : 5.50 1000 s: (5.50)

Remarks:

Note remarks

Test sheet

: MB

Edition

: 21.08.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 446 295

Injection pump

Pump designation : PES6MW100/720RS1131-

EP type number

: 0 413 406 165

Governor

Governor design. : RQV300...1300MW67-5

Governer no.

: 0 420 083 262

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: OM 366 LA

1st version kW

: 155.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test Lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.90x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

Spread

2nd speed

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 300.0

Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5) cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

travel mm : 8.40...8.80

rpm : 880 2nd speed

: 4.90...5.10 travel mm

3rd speed rpm : 500

: 2.70...3.30 travel mm

rpm : 300 4th speed

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed

rpm : 1300

Aneroid pressure h: 1000

Del.quantity

; 98.0...100.0

1000 : (96.0...102.0)

cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 12.10

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

rpm : 1450...1480 Speed

4th rack travel in: 1550

rom : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.2

Testina:

rpm : 200 Speed Minimum rack trave: 7.50

rom : 300 Speed

Rack travel in mm : 6.10...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom:

Pressure hPa : -

: 10.20...10.30 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 200

Rack travel in m: 11.20...11.30

2nd pressure hPa : 350

Rack travel in m: 12.10...12.40

3rd pressure hPa : 1000

Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min: 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 600 Speed

Del.quantity cm3/: 85.0...88.0

1000 s: (82.5...90.5)

cm3 : 5.00Spread

1000 s: (7.00)

Aneroid pressure h: -

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 35.0...37.0 1000 s: (33.0...39.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed : 300 rpm

Rack travel in mm : 6.10...6.30 Del.quartity cm3/: 9.8...13.0

1000 s: (6.5...15.5)

Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

Note remarks

Test sheet

: 25.02.94 Edition Replaces : 03.92 Test oil : ISO-4113

Combination no. : 0 403 446 301

Injection pump

Pump designation : PES6MW100/720RS1131-

EP type number : 0 413 406 165

Governor

Governor design. : RQV300...1300MW50-22

: 0 420 083 268 Governer no.

Customer-spec. information Customer : MB-NFZ

: OM366LA Engine

: 177.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

: 9.40...9.80 travel mm

rpm : 1350 2nd speed

: 8.50...8.70 travel mm

rpm : 450 3rd speed

travel mm : 2.60...3.20

rpm : 300 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1340 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

Del.quantity

1000 : (110.0...116.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 110...118 Testina: 1st rack travel in: 13.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1470...1500 Speed 4th rack travel in: 1550 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 74...82 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.5 Testina: Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 6.40...6.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure Rack travel mm : 14.4...14.5 Measurement 1/min : 500Speed 1st pressure hPa : -Rack travel in m: 10.8...10.9 2nd pressure hPa : 200 Rack travel in m: 11.1...11.3 3rd pressure hPa : 500 Rack travel in m: 13.5...13.7 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 750 Speed Del.quantity cm3/: 105.5...108.5 1000 s: (103.0...111.0)

cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

!st version
1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Spread

Note remarks

Test sheet : MB

: 15.02.94 Edition Replaces : 09.92 : ISO-4113 Test oil

: 0 403 446 302 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1300MW50-24

: 0 420 083 270 Governer no.

Customer-spec. information : MB-NFZ Customer

: OM 366 A Engine

1st version kW : 121.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Test Lines : 1 680 715 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 10.90...11.00

bel.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

rpm : 1350 2nd speed

: 8.50...8.70 travel mm

rpm : 500 3rd speed

2.70...3.30 travel mm

rpm : 300 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 700

: 87.0...89.0 1000 : (85.0...91.0) Del.quantity

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 108...116 Testing: 1st rack travel in: 9.90 rom : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring rpm : 300° Rack travel in mm: 6.2 Testing: Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 6.10...6.30 TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.90...11.00 2nd speed rpm : 750 Rack travel in m: 11.60...11.70 3rd speed rpm : 1100 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 COM hPa : 700 Pressure : 11.6...11.7 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.8...9.9 2nd pressure hPa : 200 Rack travel in m: 10.2...10.3 3rd pressure hPa : 300 Rack travel in m: 11.0...11.3 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 Speed rpm : 1300 Del.quantity cm3/: 87.0...89.0 1000 s: (85.0...91.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: 700 Speed rpm : 750 Del.quantity cm3/ : 85.5...88.5 1000 s: (83.0...91.0) cm3 : 5.00 Spread 1000 s: (7.00) Aneroid pressure h: rpm : 500 Speed Del.quaritity cm3/: 48.0...50.0 1000 s: (46.0...52.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

rpm : 1340...1350

LOW IDLE

Speed

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 15.02.94 Edition : 03.92 Replaces : ISO-4113 Test oil Combination no. : 0 403 446 303 Injection pump Pump designation : PES6MW100/720RS1131-EP type number : 0 413 406 165 Governor Governor design. : RQV300...1300MW50-25 : 0 420 083 271 Governer no. Customer-spec. information Customer : MB-NFZ : 0M366LA Engine 1st version kW : 155.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 101 Opening pressure, bar : 207...210 Test lines : 1 680 750 089

Outside diameter x Wall thickness x Length mm : 8.00x2.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values __ BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 3.60...3.70 : (3.55...3.75)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1300 1st speed Rack travel in mm : 13.10...13.20 Del.quantity cm3/: 9.8...10.0 100 s: (9.6...10.2) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1450 : 9.40...10.00 travel mm 2nd speed rpm : 1350 : 8.50...8.70 travel mm rpm : 500 3rd speed : 2.70...3.30 rpm : 300 travel mm 4th speed : 1.20...1.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1350 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 1000 : 98.0...100.0 Del.quantity 1000 : (96.0...102.0) : 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 12.10

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

Speed rpm : 1455...1485

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 74...82

Setting point w/out bumper spring

nom : 300 Speed Rack travel in mm: 6.5

Testina:

Speed : 200 rpm Minimum rack trave: 8.00 : 300 Speed rpm .

Rack travel in mm : 6.40...6.60

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rom Pressure hPa : 1000

Rack travel mm : 13.1...13.2

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.5...10.6

2nd pressure hPa : 200

Rack travel in m: 11.2...11.3

3rd pressure hPa : 350

Rack travel in m: 12.4...12.7

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 750 Speed

Del.quantity cm3/: 87.0...91.0

1000 s: (85.0...93.0)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 41.0...43.0 1000 s: (39.0...45.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0

1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50

1000 s: (5.50)

:

Remarks:

L02

Note remarks

Test sheet

Edition : 15.03.94

Replaces

: ISO-4113 Test oil

Combination no. : D 403 446 321

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1300MW50-31

Governer no. : 0 420 083 294

Cust. part no. : 0240748802

Customer-spec. information Customer : MB-NFZ

: OM 366 A Engine

1st version kW : 121.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Test lines : 1 680 715 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.15...1.65 travel mm

rpm : 510 2nd speed

: 4.03...4.53 travel mm

rpm : 710 3rd speed

: 4.91...5.41 rpm : 1354 travel mm

4th speed

travel mm : 8.03...8.43

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300Speed Aneroid pressure h: 700

Del.quantity

: 86.0...88.0 1000 : (84.0...90.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 116...124

Testina: 1st rack travel in: 9.50 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1550 rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever position degrees: 84...92 Setting point w/out bumper spring rpm : 300

Rack travel in mm: 5.5

Testina: : 200 Speed rpm Minimum rack trave: 7.00 Speed rom : 300

Rack travel in mm : 5.40...5.60

Aneroid/Altitude Compensator Test

1st version

Settina : 500 Speed rpm Pressure hPa : 700

Rack travel mm : 11.20...11.40

Measurement 1/min : 500 Speed

1st pressure hPa : -Rack travel in m: 9.20...9.30 2nd pressure hPa : 300

Rack travel in m: 9.70...9.90

3rd pressure hPa : 400

Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 Speed : 850 rpm

Del.quantity cm3/: 85.5...88.5 1000 s: (83.0...91.0)

Spread cm3 : 5.00

1000 s: (7.0) Aneroid pressure h: -

: 500 Speed rpm Del.quantity cm3/: 48.0...50.0 1000 s: (46.0...52.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50 rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

: 100 Speed rom Del.quantity cm3/: 80.0...90.0 1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50 1000 s: (5.50)

:

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.60...3.70 : (3.55...3.75) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : MB Edition : 16.03.94 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 323 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/720RS1131-1st speed rpm: 1300 EP type number : 0 413 406 165 Governor Rack travel in mm : 13.25...13.35 Governor design. : RQV300...1300MW50-33 Governer no. : 0 420 083 298 Del.quantity cm3/: 9.8...10.0 Cust. part no. : 0240748902 100 s: (9.6...10.2) Customer-spec. information cm3 : 0.3Spread Customer : MB-NFZ 100 s: (0.6) Engine : OM 366 A rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 1st version kW : 155.0 Rated speed : 2600 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Inlet press., bar: 1.50 : 1.13...1.63 travel mm rpm : 510 2nd speed Test nozzle holder : 4.03...4.53 travel mm : 1 688 901 101 assembly 3rd speed rpm : 720 : 4.94...5.44 travel mm **Opening** rpm : 1360 4th speed pressure, bar : 207...210 : 8.09...8.59 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test Lines : 1 680 715 089 1st version Outside diameter rpm : 1300 Speed x Wall thickness Aneroid pressure h: 1000 x Length mm : 8.00x2.50x600 Del.quantity : 98.0...100.0 1000 : (96.0...102.0) (A) Injection pump setting values Spread cm3: 3.50 Insp. values in parentheses 1000 : (6.00) Set equal delivery quant. per values ___ RATED SPEED BEGINNING OF DELIVERY 1st version Test pressure, bar: 30...32 Control lever

position degrees: 108...116

Testing: 1st rack travel in: 12.3 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1475...1505 Speed 4th rack travel in: 1550 rom : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 74...82 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm: 6.4...6.6 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1000 Rack travel mm : 13.25...13.35 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.85...11.05 2nd pressure hPa : 200 Rack travel in m: 11.3...11.5 3rd pressure hPa : 350 Rack travel in m: 12.5...12.7 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 750 Speed rpm Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0) Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 40.0...42.0

1000 s: (38.0...44.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.3 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 100.0...110.0

1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.4...6.6 Del.quantity cm3/ : 10.0...14.0 1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

L06

Note remarks

Test sheet

Edition

: 15.03.94

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 446 324

Injection pump

Pump designation : PES6MW100/720RS1131-

EP type number

: 0 413 406 165

Governor

Governor design. : RQV300...1300MW136

Governer no.

: 0 420 083 300

Cust. part no.

: 0240749002

Customer-spec. information Customer

: MB-NF7

Engine

: OM 366 LA

1st version kW

: 177.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assambly

: 1 688 901 101

Opening 1

pressure, bar

: 207...210

Test lines

: 1 680 715 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values

Set equal delivery quant.

Insp. values in parentheses

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

Firing order

: 3.6...3.7 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1300

Rack travel in mm : 14.4...14.5

Del.quantity cm3/: 11.1...11.3

100 s: (10.9...11.5)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 300.0

Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread

cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.89...1.39 travel mm

2nd speed 578 rpm :

4.46...4.96 travel mm

3rd speed rpm : 640

: 4.85...5.35 travel mm

: 1355 4th speed rpm travel mm

: 9.93...10.43

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1300

Aneroid pressure h: 1000 Del.quantity

: 111.0...113.0

1000 : (109.0...115.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 110...118

L07

Testing: 1st rack travel in: 13.4 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1445...1475 Speed 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 65...73 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.6 Testina: Speed : 200 rpm Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm: 6.5...6.7 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 COM Pressure hPa : 1000 Rack travel mm : 14.4...14.5 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.95...11.05 2nd pressure hPa : 200 Rack travel in m: 11.25...11.45 3rd pressure hPa : 500 Rack travel in m: 13.95...14.15 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 1300 Speed rpm Del.quantity cm3/: 111.0...113.0 1000 s: (109.0...115.0) Spread cm3 : 3.501000 s: (6.0) Aneroid pressure h: 1000 Speed : 750 rom . Del.quantity cm3/: 104.5...107.5 1000 s: (102.0...110.0) Spread cm3: 5.00 1000 s: (7.00) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 40.0...42.0 1000 s: (38.0...44.0) EREAKAWAY 1st version 1mm rack travel less than

full loed rack tr: 13.4 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Remarks:

L₀₈

Note remarks

Test sheet : MAN 7,3 C : 30.03.94 Edition Replaces : 06.91 Test oil : ISO-4113

Combination no. : 0 403 456 113

Injection pump

Pump designation ; PES6MW100/321RS1210

EP type number

: C 413 405 201

Governor

Governor design: RQ250/1050MW84-6 : 0 420 082 049 Governer no.

Cust. part no. : 3-7127

Customer-spec. information : MAN Customer

Engine : D 0826 LUH 250

1st version kW : 184.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: D 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.5...3.6 : (3.3.45...3.65) Prestroke mm

Rack travel in mm: 9.0...12.0

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed mom : 800

Rack travel in mm : 14.0...14.1

Del.quantity cm3/: 16.2...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.3...1.7

100 s: (1.05...1.95)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.35...1.55 travel mm 341 2nd speed mom :

: 3.45...3.65 travel mm

: 460 3rd speed rom

: 5.9...6.1 travel mm rpm : 1107 4th speed

travel mm : 6.44...6.64

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

rpm : 600

Rack travel in mm : 19.2...20.8

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 800 Speed

Aneroid pressure h: 1100

: 161.0...163.0 Del.quantity

1000 : (158.0...166.0)

cm3 : 4.00Spread 1000 : (7.50) RATED SPEED 1st version Control Lever position degrees: 95...103 Setting point: Speed Rack travel in mm : 20.0 Testina: 1st rack travel in: 13.0 Speed rpm : 1075...1090 2nd rack travel in: 4.00 Speed rpm : 1130...1160 4th rack travel in: 1250 Speed nom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring : 250 rpm Rack travel in mm : 5.0 Testing: Speed rpm : 100 Minimum rack trave: 7.5 Speed rom : 250 Rack travel in mm: 4.9...5.1 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 1100 Speed rpm Pressure Rack travel mm : 14.0...14.1 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.2...9.3 2nd pressure hPa : 150 Rack travel in m: 9.5...9.6
3rd pressure hPa : 700 Rack travel in m: 12.8...13.1 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100

Del.quantity cm3/: 161.5...165.5 1000 s: (158.5...168.5) Spread cm3 : 6.001000 s: (9.0) Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/: 157.5...161.5 1000 s: (154.5...164.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 67.0...69.0 1000 s: (65.0...71.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.0 rpm : 1075...1090 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 70.0...90.0 1000 s: (67.0...93.0) LOW IDLE

Remarks:

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L10

Speed

nom : 600

Note remarks

Test sheet : MAN 6,2 F
Edition : 30.03.94
Replaces : 09.92
Test oil : ISO-4113

Combination no. : 0 403 456 120

Injection pump

Pump designation : PES6MW100/321RS1210

EP type number : 0 413 406 201

Governor

Governor design. : RQ250/1050MW84-11

Governer no. : 0 420 082 066

Cust. part no. : 3-7220

Customer—spec. information Customer : MAN

Engine : 0 0826 LUH 06

1st version kW : 184.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6

: 3.5...3.6 : (3.3.45...3.65)

Rack travel in mm: 9.0...12.0

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 14.0...14.1

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 1.3...1.7

100 s: (1.05...1.95)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.35...1.55

2nd speed rpm : 341

travel mm : 3.45...3.65

3rd speed rpm : 460

travel mm : 5.9...6.1

4th speed rpm : 1107

travel mm : 6.44...6.64

GUIDE SLEEVE POSITION Control-lever position

Degree: 108...110

Speed rpm: 600

Rack travel in mm : 19.2...20.8

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 800 Aneroid pressure h: 1100

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm3 : 4.00Del.quantity cm3/: 161.0...165.0 1000 : (7.50) 1000 s: (158.0...168.0) Spread cm3 : 6.00RATED SPEED 1000 s: (9.0) Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/ : 155.0...159.0 1000 s: (152.0...162.0) 1st version Control lever position degrees: 99...107 Aneroid pressure h: rpm : 500 Setting point: Speed Del.quantity cm3/: 67.0...69.0 1000 s: (65.0...71.0) Speed Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.0 BREAKAWAY rpm : 1097...1113 Speed 2nd rack travel in: 4.00 1st version speed rpm : 1180...1210 4th rack travel in: 1300 Speed 1mm rack travel less than rpm : 0.00...1.00Speed full load rack tr: 13.0 : 1097...1113 Speed FDM LOW IDLE 1 Control lever STARTING FUEL DELIVERY position degrees: 76...84 Setting point w/out bumper spring rpm : 250 Speed rpm : 100 Rack travel in mm: 5.1 Del.quantity cm3/: 60.0...80.0 1000 s: (57.0...83.0) Testina: Speed rpm : 100 LOW IDLE Minimum rack trave: 6.5 rpm : 250 Speed Speed rpm : 250 Rack travel in mm: 5.0...5.2 Rack travel in mm: 5.0...5.2 Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) Spread cm3 : 3.50 1000 s: (5.50) Aneroid/Altitude Compensator Test 1st version Remarks: Setting Speed : 500 rpm hPa : 1100 Pressure Rack travel mm : 14.0...14.1 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.4...9.5 2nd pressure hPa : 150 Rack travel in m: 9.7...9.8 3rd pressure hPa : 700 Rack travel in m: 13.2...13.5 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100

Speed

rpm : 600

Note remarks

Test sheet : CUM 8,3 H 2 Edition : 20.04.94 Replaces : 01.91 Test oil : ISO-4113

Combination no. : 0 403 466 113

Injection pump

Pump designation : PES6MW100/120RS1137-

EP type number : 0 413 406 157

Governor

Governor design. : RSV450...1100Mw2A319

Governer no. : 0 420 085 114

Cust, part no. : 3195686

Customer-spec. information Customer : CDC

: 6 CTA Engine : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 410 270 183

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.5...3.6 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 15.05...15.25

100 s: (14.85...15.45)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 450.0 2nd speed Rack travel in mm : 6.7...6.9 Del.quantity cm3/ : 1.6...2.0

100 s: (1.35...2.25) Spread

cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750 Aneroid pressure h: -

Del.quantity : 750.5...154.5)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

L13

Setting point:

Speed : 800 rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.5

rpm : 1150...1160

and rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1370

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 19...27

Setting point w/out bumper spring

rpm : 450 Rack travel in mm: 6.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 350

Rack travel in mm : 6.20...6.40

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

TORQUE CONTROL

Dimension a mm : 1.50

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 14.0...14.1

2nd speed rpm : 1100

Rack travel in m: 12.5...12.7

3rd speed rpm : 950

Rack travel in m: 13.2...13.6

FUEL DELIVERY CHARACTERISTICS

1st version

: 1100 Speed

Del.quantity cm3/: 130.5...133.5

1000 s: (128.0...136.0)

cm3 : 5.00Spread

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.5

Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...145.0

1000 s: (122.0...148.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 450 Speed

Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Starting/full-load transition speed from holding magnet = 500 1/mir.

Note remarks

Test sheet : CUM Edition : 20.04.94 Replaces : 04.92 Test oil : ISO-44113

Combination no. : 0 403 466 117JD

Injection pump

Pump designation : PES6MW100/120RS1178 EP type number : 0 413 406 160

Governor

Governor design. : RSV350...1250Mw2A332

: 0 420 085 152 Governer no.

Cust, part no. : 3922489

Customer-spec, information Customer : CDC

Engine : 6 CTA

1st version kW : 186.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55

: (3.4...3.6)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 14.25...14.45

100 s: (14.05...14.65)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0Rack travel in mm : 6.7...6.9 Del.quantity cm3/ : 2.35...2.75

100 s: (2.15...2.95)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 900

: 142.5...144.5 Del.quantity

1000 : (140.5...146.5) Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Setting point:

Speed : 800 rom Rack travel in mm: 0.6

Testing:

1st rack travel in: 13.1

rpm : 1115...1125 Speed

2nd rack travel in: 4.00

Speed rpm : 1255...1285 4th rack travel in: 1400

rom : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 29...37

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.3

Testing:

Speed rom: : 100 Minimum rack trave: 19.00 rpm : 350 Speed

Rack travel in mm : 6.20...6.40

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed COM hPa : 900 Pressure

: 14.0...14.3 Rack travel am

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.7...10.9

2nd pressure hPa : 215

Rack travel in m: 11.6...11.8

3rd pressure hPa : 390

Rack travel in m: 13.0...13.4

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 92.5...93.5

1000 s: (90.5...98.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.1

rpm : 1115...1125 Speed

STARTING FUEL DELIVERY

Speed rpa : 100

Del.quantity cm3/ : 160.0...180.0

1000 s: (155.0...185.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 23.5...27.5 1000 s: (21.5...29.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Adjust stop lever to 0.5...1.0 mm before stop.

Note remarks

Test sheet : CUM

Edition : 28.05.93

Replaces Test oil

: ISO-4113

Combination no. : 0 403 466 137

Injection pump

Pump designation : PES6MW100/120RS1148

EP type number

: 0 413 406 143

Governor

Governor design. : RSV400...900MW7A319-

24

Governer no. : 0 420 085 216

Cust. part no. : 3921082

Customer spec. information

Customer : CDC

Engine : 6 CTA Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.6...3.7 : (3.55...3.75

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.5...13.6

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.0

100 s: (1.35...2.25)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del. quantity : 183.0...185.0

1000 : 180.0...188.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 105...113

Setting point:

Speed rpm : 800 Rack travel in mm: 0.65 Testing: 1st rack travel in: 12.5 rpm : 940...950 2nd rack travel in: 4.00 rpm : 980...990 **Speed** 4th rack travel in: 1125 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.8 Testing: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 400 Rack travel in mm: 5.7...5.9 SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 6.2...6.4 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.5 Speed rpm : 940...950 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 125.0...145.0 1000 s: (122.0...148.0) Rack travel in mm: 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread

1000 s: (5.50)

Start-of-delivery mark 13° cam angle after start of delivery cyl. 1.

Remarks:

Note remarks

Test sheet : CUM

: 31.03.94 Edition

Replaces Test oil

: ISO-4113

Combination no. : D 403 466 145

Injection pump

Pump designation : PES6MW100/120RS1137-

EP type number

: 0 413 406 180

Governor

Governor design. : RSV550...1100Mw2A319

: 0 420 085 225 Governer no.

: 3925549 Cust. part no.

Customer-spec. information Customer : CDC

Engine : 6 CTA

: 191.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening .

pressure, bar : 207...210

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6 : (3.45...3.65 Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.4...14.5

Del.quantity cm3/: 14.95...15.15

100 s: (14.65...15.45)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rom : 550.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.75...2.15 100 s: (1.5...2.4)

cm3 : 0.3Spread

100 s: (0.5)

QUIDE SLEFVE POSITION Cantrol-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 145.0...147.0 1000 : (142.0...150.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Setting point:

Speed rom : 800 Rack travel in mm: 0.65 Testina: 1st rack travel in: 13.4 rpm : 1155...1175 2nd rack travel in: 4.00 Speed rpm: 1225...1245 4th rack travel in: 1350 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring rpm : 550 Rack travel in mm: 6.0 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm Speed rpm : 550 Rack travel in mm : 5.9...6.1 SET IDLE AUXILIARY SPRING : 550 rpm Rack travel in mm: 6.9...7.1 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.4 rpm : 1155...1175 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 120.0...140.0 1000 s: (117.0...133.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 550 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 17.5...21.5

1000 s: (15.0...24.0) cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Start-of-delivery mark 13° cam angle after start of delivery cyl. 1.

Note remarks

Test sheet : CUM

: 01.03.94 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 466 147

Injection pump

Pump designation : PES6MW100/120RS1148

EP type number : 0 413 406 143

Governor

Governor design. : RSV400...900MW4A361

: 0 420 085 242 Governer no.

Cust, part no. : 3924615

Customer-spec. information Customer : CDC

: 6 CTA Engine

: 208.0 1st version kw Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.6...3.7 : (3.55...3.75 Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.5...13.6

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm ; 400.0 2nd speed Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 1.6...2.0 100 s: (1.35...2.25)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 183.0...185.0 Del.quantity

1000 : 180.0...188.0) cm3

: 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 105...113

Setting point: rpm : 800 Speed Rack travel in mm: 0.65 Testing: 1st rack travel in: 12.5 rpm : 940...950 Speed 2nd rack travel in: 4.00 rpm : 980...990 4th rack travel in: 1125 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 75...83 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.8 Testina: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.7...5.9 SET IDLE AUXILIARY SPRING rpm : 400 Speed Rack travel in mm: 6.2...6.4 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.5 Speed rpm : 940...950 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 125.0...145.0 1000 s: (122.0...148.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 400 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

Start-of-delivery mark 13° cam angle after start of delivery cyl. 1.

Note remarks

Test sheet : MB 6,1 D 5 Edition : 02.05.94 Replaces : 04.91 Test oil : ISO-4113

Combination no. : 0 403 476 103

Injection pump

Pump designation : PES6MW100/320RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RSV350...1200Mw0A342

: 0 420 085 169 Governer no.

: 0210746502 Cust. part no.

Customer-spec. information Customer : MB

Engine : OM 366A

1st version kW : 92 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.7...3.8

: (3.65...3.85) Rack travel in mm : 9.0...12.0

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.1...10.2

Del.quantity cm3/: 6.5...6.7

100 s: (6.3...6.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0Rack travel in mm: 6.2...6.9 Del.quantity cm3/: 0.9...1.3

100 s: (0.65...15.5)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -3 nom : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 750

: 65.0...67.0 Del.quantity

1000 : (63.0...69.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 94...102

Setting point:

Speed rpm Rack travel in mm: 0.65

Testing: 1st rack travel in: 9.1 rpm : 1235...1240 Speed 2nd rack travel in: 4.00 rpm : 1274...1279 Speed 3rd rack travel in: 4.00 rpm : 1300...1330 Speed 4th rack travel in: 1450 rpm : 0.30...1.70 Speed 5th rack travel in: 1245...1265 Speed rom : 9.10 LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.55 Speed rpm : 350 Rack travel in mm : 6.2...6.9 Rack travel in mm : 2.00 rjom : 440...500 Speed SET IDLE AUXILIARY SPRING Speed rpm : 350 Rack travel in mm : 6.55 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.1...10.2 2nd speed rpm : 600 Rack travel in m: 10.8...11.0 3rd speed rpm : 1000 Rack travel in m: 10.4...10.6 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 750 Speed non Pressure : 10.9...11.0 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.6...9.7 2nd pressure hPa : 180 Rack travel in m: 9.8...10.0 3rd pressure hPa : 350 Rack travel in m: 10.5...10.7

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 750

1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 45.0...47.0 1000 s: (43.0...49.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.1 rpm : 1235...1240 Speed STARTING FUEL DELIVERY Speed LOW : 100 Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0) LOW IDLE Speed rpm : 350 Rack travel in mm : 6.2...6.9 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: :

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

1st version

Note remarks

: MB 6,1 D 6 : 02.05.94 Test sheet Edition : 07.91 Replaces Test oil : ISO-4113

Combination no. : 0 403 476 104

Injection pump

Pump designation : PES6MW100/320RS1131

EP type number : 0 413 406 123

Governor

: RSV350...1200Mw0A342 Governor design.

Governer no. : 0 420 085 170

Cust. part no. : 0210746602

Customer-spec. information Customer : MB

Engine : OM 366A

1st version kW : 100 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.7...3.8 Prestroke mm

: (3.65...3.85) Rack travel in mm : 9.0...12.0

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.5...10.6

Del.quantity cm3/: 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 5.8...6.5

Del.quantity cm3/: 0.9...1.3 100 s: (0.65...15.5)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 750

74.0...76.0 1000 : (72.0...78.0) cm3 : 3.50 Del.quantity

Spread

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 96...104

Setting point:

Speed rpm Rack travel in mm: 0.65

Testina: 1st rack travel in: 10.5 Speed rpm : 1240...1245 2nd rack travel in: 4.00 : 1284...1289 Speed rpm 3rd rack travel in: 4.00 rom : 1300...1330 Speed 4th rack travel in: 1450 Speed rpm : 0.30,..1.70 5th rack travel in: 1240...1256 rpm : 9.5 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 6.15 : 350 Speed man Rack travel in mm : 5.8...6.5 Rack travel in mm: 2.00 rom : 450...530 Speed SET IDLE AUXILIARY SPRING Speed rom : 350 Rack travel in mm: 6.15 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.5...10.6 2nd speed npm : 600 Rack travel in m: 11.3...11.4 3rd speed rpm : 1000 Rack travel in m: 10.9...11.1 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 750 Rack travel mm : 11.3...11.4 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.6...9.7 2nd pressure hPa : 150 Rack travel in m: 9.9...10.1 3rd pressure hPa : 300 Rack travel in m: 10.9...11.1 FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.5 Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 83.0...93.0 1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.8...6.5
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

1st version

Aneroid pressure h: 750

Note remarks

Test sheet : MB 6,1 D 7
Edition : 02.05.94
Replaces : 07.91
Test oil : ISO-4113

Combination no. : 0 403 476 105

Injection pump

Pump designation : PES6MW100/320RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RSV350...1200MW0A342

-8

Governer no. : 0 420 085 171

Cust. part no. : 0210746702

Customer—spec. information Customer : MB

Engine : OM 366A

1st version kW : 114 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening .

pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.7...3.8

: (3.65...3.85)
Rack travel in mm : 9.0...12.0

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.9...11.0

Del.quantity cm3/: 8.3...8.5

100 s: (8.1...8.7)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.8...6.5 Del.quantity cm3/: 0.9...1.3

100 s: (0.65...15.5)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 750

Del.quantity : 83.0...85.0 1000 : (81.0...87.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm : 800 Rack travel in mm : 0.65 Testing:

1st rack travel in: 9.9

rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1289...1294

3rd rack travel in: 4.00

Speed rpm : 1325...1355

4th rack travel in: 1450

rpm : 0.30...1.70 Speed

5th rack travel in: 1240...1256 Speed rpm : 9.9

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 6.15

Speed rpm : 350

Rack travel in mm: 5.8...6.5

Rack travel in mm: 2.00

: 420...500 Speed rom

SET IDLE AUXILIARY SPRING

rpm : 350 Speed

Rack travel in mm: 6.15

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200 Rack travel in m: 10.9...11.0

2nd speed rpm : 600 Rack travel in m: 11.7...11.8

3rd speed rpm : 1000

Rack travel in m: 11.0...11.2

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm -: 500 hPa : 750 Pressure

: 11.7...11.8 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.6...9.7

2nd pressure hPa : 300

Rack travel in m: 10.7...10.9

3rd pressure hPa : 400

Rack travel in m: 11.3...11.5

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

Speed rpm : 600 Del.quantity cm3/ : 78.0...81.0

1000 s: (75.5...83.5)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 45.0...47.0

1000 s: (43.0...49.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.9

Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 83.0...93.0

1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm: 5.8...6.5

Del.quantity cm3/: 9.0...13.0

1000 s: (6.5...15.5) cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Test hydr. locking device for starting

with 500...1000 hPa air pressure.

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar

atmospheric pressure.

Note remarks

Test sheet : MAN

Edition : 12.04.94

Replaces

Test oil : ISO-4113

Combination no. : 0 403 486 109

Injection pump

Pump designation : PES6MW100/321RS1208

EP type number : 0 413 406 199

Governor

: RSV350...1000MW1A360 Governor design.

Governer no. : 0 420 085 240

: 3-7312 Cust. part no.

Customer-spec. information Customer : MAN

Engine : D 0826 LE103

1st version kW : 161.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6

: (3.3.45...3.65)

Rack travel in mm: 9.0...12.0

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 970

Rack travel in mm : 14.85...14.95

Del.quantity cm3/: 15.0...15.2

100 s: (14.7...15.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 350.0Rack travel in mm: 4.3...4.7 Del.quantity cm3/ : 1.1...1.5

100 s: (0.85...1.75)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 mpm : 800

Rack travel in mm: 0.3...1.0

Governor spring pre-tension Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 970

: 150.0...152.0 Del.quantity

1000 : (147.0...155.0)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 87...95

Setting point:

Speed : 800 CDM

MO1

Rack travel in mm: 0.65 Testina: 1st rack travel in: 13.9 rpm : 1020...1030 Speed 2nd rack travel in: 4.00 rpm : 1180...1190 Speed 3rd rack travel in: 4.0 Speed rpm: 1085...1115 4th rack travel in: 1150 Speed rpm : 0.3...1.7 LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 4.5 Testing: Speed rpm : 100 Minimum rack trave: 19.0 Speed rpm : 350 Rack travel in mm: 4.3...4.7 SET IDLE AUXILIARY SPRING rpm : 350 Speed Rack travel in mm: 4.8...5.2 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 970 Rack travel in m: 14.85...14.95 2nd speed rpm: 500 Rack travel in m: 14.8...15.D 3rd speed rpm: 700 Rack travel in m: 14.8...15.0 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 148.0...152.0 1000 s: (145.0...155.0) cm3 : 6.00Spread 1000 s: (9.0) rpm : 700 Speed Del.quantity cm3/: 156.0...160.0 1000 s: (153.0...163.0) BREAKAWAY 1st version 1mm rack travel less than

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (137.0...163.0)

LOW IDLE

Speed rpm: 390
Rack travel in mm: 4.3...4.7
Del.quantity cm3/: 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3: 3.50
1000 s: (5.50)

:

Remarks:

MO2

Speed

full load rack tr: 13.9

rpm : 14.85...14.95

Note remarks

: DEE 7,6 h 2 : 30.04.92 Test sheet Edition : 09.88 Replaces Test oil : ISO-4113

Combination no. : 9 400 230 066

Injection pump

Pump designation : PES6A1000410RS2676

EP type number : 9 410 230 023

Governor

: RSV425...1100A2C2161 Governor design.

-1L

Governer no. : 9 420 234 133

Customer-spec. information

Customer : JOHN DEERE

: 6466T Engine

1st version kW : 120.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 32...34

Prestroke mm : 2.45...2.55

: (2.40...2.60)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ • 9.9...10.1

100 s: (9.7...10.3)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 425.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.7)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 500

Del.quantity : 99.0...101.0 1000 : (97.0...103.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

rpm : 1145...1155 Speed

MO3

2nd rack travel in: 4.00

rpm : 1205...1215 Speed

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 24...32

Setting point w/out bumper spring

rpm : 425 Rack travel in mm: 4.9

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 425

Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 9.40...9.40

2nd speed rpm : 750

Rack travel in m: 10.60...10.80

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : 173

: 10.30...10.40 Rack travel mm

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 80

Rack travel in m: 9.40...9.80

3rd pressure hPa : 500

Rack travel in m: 10.60...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 500 : 750 Speed rpm -

Del.quantity cm3/: 116.0...119.0 1000 s: (114.0...121.0)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: -

1000 s: (84.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

rpm : 1145...1755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (185.0...215.0)

Rack travel in mm : 19.40...19.40

HIGH IDLE

1st version

Speed : 1195 rpm

Rack travel in mm : 4.70...4.90

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 21.0...25.0
1000 s: (18.5...27.5)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark = 15.5° after

start of delivery cyl. 1.

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : DEE 7,6 h 3 Edition : 20.6.88 Replaces : 7.86 Test oil : ISO-4113

Combination no. : 9 400 230 068

Injection pump

Pump designation : PES6A1000410RS2676-1

Governor

Governor design. : RSV450...1000A1B2186

Customer-spec. information Customer : JOHN DEERE

Engine : 6466 A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 413 009

Opening

pressure, bar : 172...175

Test lines : 9 631 230 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

: 2.45...2.55 Prestroke mm

: (2.40...2.60)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1000

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 10.50...10.70

Spread cm3 : 0.35

100 s: (0.60)

2nd speed rpm : 450

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 1.80...2.20

cm3 : 0.35Spread 100 s: (0.60)

GUIDE SLEEVE POSITION Control-lever position

Degree: LOSE

rpm : 800 Speed

Rack travel in mm : 0.30...1.000

Governor spring pre-tension

Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 105.00...107.00 Del.quantity

1000 : (103.0,..109.0)

RATED SPEED

1st version Control lever

position degrees: 48...56

Testing:

1st rack travel in: 8.90

Speed rpm : 1045...1055

2nd rack travel in: 4.00

rpm : 1070...1100 Speed

4th rack travel in: 1150

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 450 Speed Rack travel in mm: 4.80 Testing:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 450 Speed

Rack travel in mm: 5.20...5.40

Rack travel in mm : 2.00 rpm : 535...595 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 9.90...20.00
2nd speed rpm : 700
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 109.50...112.50 1000 s: (107.0...115.0)

Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Note remarks

Test sheet : DEE 7,6 h 4 Edition : 20.6.88 Replaces : 7.86

: ISO-4113 Test oil

Combination no. : 9 400 230 068

Injection pump

Puno designation: PES6A1000410RS2676-1

Governor

Governor design. : RSV450...1000A1C2186

Customer-spec. information

Customer : JOHN DEERE

: 6466 A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: D 681 343 909 assembly

Openina |

pressure, bar : 172...175

Test Lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.45...2.55 Prestroke mm

: (2.40...2.60)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASTC SETTING

1st speed rpm: 1000

Rack travel in mm: 9.90...10.00

Del.quantity cm3/: 10.50...10.70

Spread cm3 : 0.35

100 s: (0.60)

rpm : 450 2nd speed

Rack travel in mm: 5.20...5.40 Del.quantity cm3/: 1.80...2.20

Spread cm3 : 0.35

100 s: (0.60)

GUIDE SLEEVE POSITION

Control-lever position

Degree: LOSE

Speed rpm : 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 105.00...107.00

1000 : (103.0...109.0)

RATED SPEED

1st version

Control Lever

position degrees: 48...56

Testing:

1st rack travel in: 8.90

Speed rpm : 1045...1055

2nd rack travel in: 4.00

rpm : 1070...1100 Speed

4th rack travel in: 1150

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 450

Rack travel in mm: 4.80

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 450 Speed

Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00

rpm : 535...595 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 9.90...20.00
2nd speed rpm : 700
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 109.50...112.50 1000 s: (107.0...115.0)

Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of

delivery of cylinder 1

Note remarks

: CUM 8,3 a 2 Test sheet Edition : 14.6.88 Replaces : 4.3.87 Test oil : ISO-4113

Combination no. : 9 400 230 098

Injection pump

Pump designation : PES6A1000320/3RS2691

Governor

Governor design. : RSV425...1100A2C2190

Customer-spec. information : CUMMINS Customer

: 6CTA 8,3 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.5

Test nozzle holder

: 1 688 901 016 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.5

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 1100 1st speed

Rack travel in mm : 13,00...13,10

Del.quantity cm3/: 11.4...11.6

100 s: (11.1...11.8)

cm3 : 0.35Spread

100 s: (0.6)

rpm : 425 2nd speed

Rack travel in mm : 5,80...6,00

Del.quantity cm3/: 1.30...1.70

100 s: (-)

cm3 : 0.35Spread

100 s: (0.55)

GUIDE SLEEVE POSITION Control-lever position

Degree. -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

RATED SPEED

1st version Control lever

position degrees: 38...46

Testing:

1st rack travel in: 12.00

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1190...1220 3rd rack travel in: 4.00

Speed rpm : 1200...1230 4th rack travel in: 1300

rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

rpm : 425

Rack travel in mm: 5.40

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm: 425

Rack travel in mm: 5.80...6.00
Rack travel in mm: 2.00

rpm : 470...530 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12,00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0 1000 s: (130.0)

Rack travel in mm : 21,00

LOW IDLE

Speed rpm : 425 Del.quantity cm3/ : 13.0...17.0 1000 s: (10.5...19.5)

Remarks:

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 b 3 : 22.11.91 Edition : 18.9.91 Replaces Test oil : ISO-4113

Combination no. : 9 400 230 107

Injection pump

Pump designation: PES6A1000320/3RS2691

EP type number : 9 410 230 028

Governor

Governor design. : RQV350...1200AB1233R

: 9 420 231 018 Governer rio.

Customer-spec. information Customer : C.D.C

Engine : 60T830

1st version kW : 157.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 11.2...11.4

100 s: (11.0...11.6)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 4.6...4.8

Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3)

cm3 : 0.6 Spread 100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 0.00...0.20

rpm : 350 2nd speed

: 1.00...1.50 travel mm

3rd speed rpm : 450

: 1.90...2.40 travel mm

4th speed rpm : 1200

travel mm : 6.90...6.90

5th speed rpm : 1350

travel mm : 8.15...8.65

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1435 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

M11

Aneroid pressure h: 700

: 112.5...114.5 Del.quantity

1000 : (110.5...116.5)

cm3 : 4.00Spread

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 40...46

Testing:

1st rack travel in: 9.80

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1315...1345 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 9...15

rpm : 350

Rack travel in mm : 4.60...4.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed nom: Pressure hPa : 700

Rack travel mm : 10.80...10.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.70

2nd pressure hPa : 260

Rack travel in m: 9.90...10.00

3rd pressure hPa : 345

Rack travel in m: 10.30...10.70

START CUT-OUT

Speed 1/min: 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 85.5...89.5

1000 s: (83.5...91.5)

Aneroid pressure h: -

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 17.0...21.0

1000 s: (14.5...23.5)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: C.D.C. # 3908558

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

Note inst. in remarks column

Test scheet : ONA 3,4 A Edition : 28.04.94 : 08.04.91 replaces Calibrating oil : ISO-4113

Injection pump : VE6/10F1800R209 Type number : 0 460 406 048

Customer Part-No. :

Customer-specific information Customer : ONAN

Engine : L634T

TEST BENCH REQUIREMENTS

Calibrating oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.2

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 0.98

mm: +-0.04(0.06)

Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400 Charge press. hPa: 800

Setting value mm: 3.90...4.30

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400 Charge press hPa: 800

Setting value bar: 4.80...5.40

Shutoff

electromagnet Volt: 12

Full-load del, with charge press.:

1/min: 1400 Speed Charge press. hPa: 800 Del. quantity cm3/

1000s.: 58.50...59.50

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700

Del. quantity cm3/

1000s.: 44.00...45.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 14.00...18.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 1900 Charge press hPa: 800 Del. quantity cm3/

1000s.: 37.00...43.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 42.00...92.00

1000s.: 42.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1400 Charge press hPa: 800

M13

cm3/1/min: 700 Inj.—qty. 1st speed difference 1000s.: 9.50...17.50 * Charge press. hPa: 800 Shutoff electromagnet Volt: 12 electromagnet Volt: 12 TD-travel dif.measurement : 41.70...83.40 Overflow correttore anticipo iniezione (SV) 1.Speed 1/min: 1400 quantity cm3/10s: (26.70...98.40) 1/min: 1800 2nd speed hPa: 800 Charge press Charge press. hPa: 800 TD-travel Shutoff difference mm: 0.50...0.70 * electromagnet Volt: 12 : 55.60...139.00 Shutoff Overflow electromagnet Volt: 12 cm3/10s: (40.60...153.00) quantity Inspection-pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses 1/min: 700 Timing-device characteristic: 1nd speed Charge-air pressure-setting 1/min: 1800 hPa: 300 2rid speed point Charge press hPa: 800 mm: 6,5 LDA-stroke mm: 5.40...6.20 TD travel Shutoff mm: (5.10...6.50) Shutoff electromagnet Volt: 12 3rd speed 1/min: 1400 Charge press hPa: 800 Charge press. hPa: 800 Shutoff mm: 3.90...4.30 TD travel mm: (3.40...4.80) electromagnet Volt: 12 Shutoff Del. quantity cm3/: 5,50...14,50 electromagnet Volt: 12 1000s.: -4th speed 1/min: 800 3rd speed 1/min: 2050 Charge press hPa: 800 Charge press. hPa: 800 mm: 1.00...1.80 TD travel Shutoff mm: (0.70...2.10) electromagnet Volt: 12 Del. quaritity cm3/: 0.00...3.00 Shutoff electromagnet Volt: 12 1000s.: -1/min: 1900 5th speed Supply-pump pressure characteristic: Charge press. hPa: 800 Shutoff 1st speed 1/min: 800 electromagnet Volt: 12 Charge press. hPa: 800 Del. quantity cm3/: 37.00...43.00 Supply-pump 1000s.: (36.00...44.00) bar: 2.70...3.30 1/min: 1950 pressure 8th speed Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Shutoff 2nd speed 1/min: 1400 electromagnet Volt: 12 Del. quantity cm3/: 23.00...31.00 Charge press. hPa: 800 Supply-pump 1000s.: (22.00...32.00) bar: 4.80...5.40 1/min: 1800 pressure 9th speed Shutoff Charge press. hPa: 800 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1800 electromagnet Volt: 12 Del. quantity cm3/: 51.50...54.50 1000s.: (51.20...55.80) Charge press. hPa: 800 Supply-pump pressure bar: 6.00...6.60 1/min: 1400 12th speed Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 58.50...59.50 Overlow quantity at overflow valve: 1000s.: (56.70...61.30)

18th speed 1/min: 700 1/min: 1400 1st speed Charge press. hPa: -Charge press. hPa: 800 Shutoff Supply pumpelectromagnet Volt: 12 : 0.10...0.30 " pressure Del. quantity cm3/: 44.00...45.00 difference bar: -1000s.: (42.20...46.80) Shutoff 1/min: 700 20th speed electromagnet Volt: 12 Charge press. hPa: 800 Shutoff Automatic starting fuel delivery: electromagnet Volt: 12 Del. quantity cm3/: 58.00...61,00 1st speed 1/min: 220 1000s.: -Shutoff electromagnet Volt: 12 Mech. shutoff: Del. quantity cm3/: 42.00...92.00 1000s.: (42.00...92.00) Mech. Abstellung: 1st speed 1/min: 1800 2nd speed 1/min: 300 Del. quantity cm3/: 0.00...3.00 Shutoff 1000s.: electromagnet Voit: 12 Shutoff Del. quantity cm3/: 18.00...42.00 1000s.: (18.00...42.00) electromagnet volt: 12 Electr. shutoff: 4th speed 1/min: 100 Shutoff 1st speed 1/min: 350 electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 Del. quantity cm3/: 42.00...92.00 1000s.: (42.00...92.00) 1000s.: (0.00...3.00) Idle delivery: Shutoff electromagnet: 1st speed 1/min: 400 Cut-in Shutoff min voltage : 10,0 electromagnet Volt: 12 Rated voltage : 12,0 Del. quantity cm3/: 14.00...18.00 1000s.: (12.00...20.00) cm3/: 3.0 Mounting and assembly dimensions: Dispersion 1000s.: (3.0) Designation 2nd speed 1/min: 450 K mm: -Shutoff KF mm: 5,6...6,0 mm: 0,6...1,0 mm: 1,7 electromagnet Volt: 12 MS Del. quantity cm3/: 0.00...6.00 SVS max. 1000s.: (0.00...6.00)

3rd speed 1/min: 350

Del. quantity cm3/: 26.50...33.50

1000s.: (26.00...34.00) mm: 6,5 LDA stroke XK mm: 20,0...22,0 XL mm: 10,1...13,5 Shutoff Remarks: electromagnet Volt: 12 Load-dependent start of delivery: Operate control lever after each Inj.-qty.dif.measurement: manifold-pressure compensator pressure change. 1st speed 1/min: 1400 Charge press. hPa: 800 Inj.-qty. cm3/ : 5.00...7.00 " difference 1000s.: -* Correction at adjusting nut Shutoff electromagnet Volt: 12 SP press.-dif.measurement:

pompa di mandata (FP):

Note inst. in remarks column

: VMA 3,4 B Test scheet Edition : 28.04.94 : 18.02.91 replaces Calibrating oil : ISO-4113

: VE6/10F1400R209-1 Injection pump Type number : 0 460 406 052

Customer Part-No. :

Customer-specific information Customer : ONAN

: 1634T-Auto Engine

TEST BENCH REQUIREMENTS

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0,2

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.0

mm: +-0.04(0.06)

Outlet : A

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1400 Speed Charge press. hPa: 800

Setting value mm: 4.30...4.70

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1100 Speed Charge press hPa: 800

Setting value bar: 3 80...4.40

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1100 Speed Charge press. hPa: 800 Del. quantity cm3/ 1000s.: 61.00...62.00

Shutoff

electromagnet Volt: 12 cm3/: 3.0 Dispersion 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 700 Speed Del. quantity cm3/

1000s.: 44.50...45.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 14.00...18.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 1480 Charge press hPa: 800

Del. quantity cm3/

1000s.: 42.00...45.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 42.00...92.00

1000s.: 42.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

M16

Speed 1/min: 1100 Overlow quantity at overflow valve: hPa: 800 Charge press Ini. aty. cm3/1/min: 700 1st speed difference 1000s.: 8.50...16.50 * Charge press. hPa: 800 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 : 41.70...83.40 TD-travel dif.measurement Overflow correttore anticipo iniezione (SV) cm3/10s: (26.70...98.40) quantity 1/min: 1100 1.Speed 1/min: 1400 2nd speed Charge press hPa: 800 Charge press. hPa: 800 TD-travel Shutoff difference mm: 0.50...0.70 *electromagnet Volt: 12 : 55.60...139.00 Shutoff Overflow clectromagnet Volt: 12 cm3/10s: (40.60...153.00) quantity Inspection pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing-device characteristic: 1/min: 700 1nd speed Charge air pressure setting point hPa: 200 1/min: 1400 3rd speed hPa: 800 Charge press LDA-stroke mm: 6,5 mm: 4.30...4.70 TD travel Shutoff mm: (3.80...5.20) electromagnet Volt: 12 Del. quantity cm3/: 47.00...48.00 1000s.: (45.20...49.80) Shutoff electromagnet Volt: 12 1/min: 800 1/min: 1560 4th speed 2nd speed Charge press hPa: 800 Charge press. hPa: 800 mm: 1.40...2.20 TD travel Shutoff mm: (1.10...2.50) electromagnet Volt: 12 Del. quantity cm3/: 14.00...22.00 Shutoff 1000s.: electromagnet Volt: 12 5th speed 1/min: 1100 3rd speed 1/min: 1600 Charge press. hPa: 800 Charge press. hPa: 800 TD travel mm: 2.70...3.30 Shutoff mm: (2.30...3.70) electromagnet Volt: 12 Del. quantity cm3/: 0,00...3.00 Shutoff electromagnet Volt: 12 1000s.: -5th speed 1/min: 1480 Supply-pump pressure characteristic: Charge press. hPa: 800 Shutoff 1st speed 1/min: 700 electromagnet Volt: 12 Del. quantity cm3/: 42.00...46.00 Charge press. hPa: 800 1000s.: (40.00...48.00) Supply-pump bar: 2.30...2.90 pressure 9th speed 1/min: 1400 Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Shutoff 2nd speed 1/min: 1100 electromagnet Volt: 12 Del. quantity cm3/: 56.50...59.50 1000s.: (55.70...60.30) Charge press. hPa: 82 Supply-pump bar: 3.80...4.40 1/min: 1100 pressure 12th speed Charge press. hPa: 800 Shutoff Shutoff electromagnet Volt: 12 1/min: 1400 3rd speed electromagnet Volt: 12 Del. quyntity cm3/: 61.00...62.00 Charge press. hPa: 800 Supply-pump 1000s.: (59,20...63.80) pressure bar: 4.80...5.40 1/min: 700 18th speed Shutoff Charge press. hPa: electromagnet Volt: 12 Shutoff electromagnet Volt: 12

Del. quantity cm3/: 44.50...45.50 Charge press. hPa: 800 1000s.: (42.70...47.30) 1/min: 700 Supply pump-20th speed pressure : 0.10...0.30 " Charge press. hPa: 800 difference bar: -Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 57.50...60,50 1000s.: -Automatic starting fuel delivery: Mech. shutoff: 1st speed 1/min: 220 Mech. Abstellung: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 42.00...92.00 1st speed 1/min: 1400 Charge press. hPa: 800 1000s.: -Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 2nd speed 1/min: 300 Shutoff electromagnet volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 18.00...42.00 Electr. shutoff: 1000s.: -4th speed 1/min: 100 Shutoff 1000s.: (0.00...3.00) electromagnet Volt: 12 Shutoff Del. quantity cm3/: 42.00...92.00 1000s.: electromagnet voit: -Idle delivery: Shutoff electromagnet: 1st speed 1/min: 400 Cut-in Shutoff min voltage : 10.0 electromagnet Volt: 12 Rated voltage : 12.0 Del. quantity cm3/: 14.00...18.00 1000s.: (12.00...20.00) Dispersion cm3/: 3.0 Mounting and assembly dimensions: 1000s.: (3.0) 1/min: 450 Designation 2nd speed K mm: -Shutoff **KF** mm: 5.6...6,0 electromagnet Volt: 12 MS mm: 0,6...1,0Del. quantity on3/: 0.00...6.00 SVS max. mm: 1,7 1000s.: (0.00...6.00) mm: 6,5 LDA stroke 1/min: 350 3rd speed mm: 20,0...22,0 XK Shutoff mm: 8,9...12,3 XL electromagnet Volt: 12 Del. quantity cm3/: 26.50...33.50 Remarks: 1000s.: -Load-dependent start of delivery: Operate control lever after each Inj.-qty.dif.measurement: manifold-pressure compensator pressure change. 1/min: 1100 1st speed Charge press. hPa: 800 Inj.-qty. cm3/ : 5.00...7.00 " * Correction at adjusting nut difference 1000s .: -Shutoff electromagnet Volt: 12 SP press.—dif.measurement: pompa di mandata (FP):

1st speed 1/min: 1100

Note inst. in remarks column

: ONA 3,4 E Test scheet : 28.04.94 Edition replaces : 18.02.91 : ISO-4113 Calibrating oil

Injection pump : VE6/10F1800R209-5 Type number : 0 460 406 065

Customer Part-No. :

Customer-specific information Customer : ONAN

: L634T Engine

TEST BENCH REQUIREMENTS

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Openina

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0.02(0.64)

Start of delivery block Piston stroke mm: 0.98

mm: +-0.04(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing device travel

Speed 1/min: 1400 Charge press. hPa: 800

Setting value mm: 3.90...4.30

M19

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400 Charge press hPa: 800

Setting value bar: 4.80...5.40

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1400 Speed Charge press. hPa: 800 Del. quantity cm3/

1000s.: 58.50...59.50

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 700 Speed Del. quantity cm3/

1000s.: 44.00...45.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 14.00...18.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 1900 Speed Charge press hPa: 800 Del. quantity cm3/

1000s.: 37.00...43.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 42.00...92.00

1000s.: 42.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1400 Speed Charge press hPa: 800

cm3/Inj.-qty. difference 1000s.: 9.50...17.50 * Overlow quantity at overflow valve: Shutoff electromagnet Volt: 12 TD-travel dif.measurement 1st speed 1/min: 700 Charge press. hPa: 800 Shutoff correttore anticipo iniezione (SV) 1.Speed 1/min: 1400 electromagnet Volt: 12 Charge press hPa: 800 : 41.70...83.40 TD-travel cm3/10s: (26.70...98.40) difference mm: 0.50...0.70 *2nd speed 1/min: 1800 Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Shutoff electromagnet Voit: 12 Inspection-pump test specifications : 55.60...139.00 Overflow Test specifications in parentheses cm3/10s: (40.60...153.00) quantity Timing device characteristic: Delivery-quant. and breakaway char.: 1/min: 1800 2nd speed Charge press hPa: 800 1nd speed 1/min: 700 mm: 5.40...6.20 TD travel Charge-air pressure-setting mm: (5.10...6.50) hPa: 300 point Shutoff LDA-stroke mm: 6.2 electromagnet Volt: 12 3rd speed 1/min: 1400 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 50.50...51.50
1000\$:: (48.70...53.30) Charge press hPa: 800 mm: 3.90...4.30 TD travel mm: (3.40...4.80) 2nd speed 1/min: 2000 Shutoff Charge press. hPa: 803 Shutoff electromagnet Volt: 12 4th speed 1/min: 800 electromagnet Volt: 12 Del. quantity cm3/: 5,50...14,50 1000s.: -Charge press hPa: 800 mm: 1.00...1.80 mm: (0.70...2.10) TD travel 1/min: 2050 3rd speed Charge press. hPa: 800 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 Supply-pump pressure characteristic: 1000s .: -1st speed 1/min: 800 5th speed 1/min: 1900 Charge press. hPa: 800 Supply-pump Charge press. hPa: 800 Shutoff pressure bar: 2.70...3.30 bar: -Shutoff electromagnet Volt: 12 2nd speed 1/min: 1400 Charge press. hPa: 800 Charge press. hPa: 800 Shutoff Supply-pump pressure bar: 4.80...5.40 bar: -Shutoff 9th speed electromagnet Volt: 12 Charge press. hPa: 800 3rd speed 1/min: 1800 Shutoff Charge press. hPa: 800 Supply-pump bar: 6.00...6.60 pressure bar: -Shutoff electromagnet Volt: 12

M20

Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quyntity cm3/: 58.50...59.50 1000s.: (56,70...61.30) 18th speed 1/min: 700 SP press.-dif.measurement: pompa di mandata (FP): Shutoff 1st speed 1/min: 1400 electromagnet Volt: 12 Charge press. hPa: 800 Del. quantity cm3/: 44.00...45.00 Supply pump-1000s.: (42.20...46.80) pressure : 0.10...0.30 " 1/min: 700 20th speed difference bar: -Charge press. hPa: 800 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 57.50...60,50 Automatic starting fuel delivery: 1000s.: -1st speed 1/min: 220 Mech. shutoff: Shutoff Mech. Abstellung: electromagnet Volt: 12 Del. quantity cm3/: 42.00...92.00 1000s.: -1st speed 1/min: 1800 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 1/min: 300 2nd speed Shutoff Shutoff electromagnet volt: 12 electromagnet Volt: 12 Det. quantity cm3/: 18.00...42.00 Electr. shutoff: 1000s.: -1st speed 1/min: 350 4th speed 1/min: 100 Del. quantity cm3/: 0.00...3.00 Shutoff 1000s.: (0.00...3.00) electromagnet Volt: 12 Del. quantity cm3/: 42.00...92.00 Shutoff electromagnet volt: -1000s.: -Idle delivery: Shutoff electromagnet: 1st speed 1/min: 400 Cut-in Shutoff min voltage : 10.0 electromagnet Volt: 12 Rated voltage : 12.0 Del. quantity cm3/: 14.00...18.00 1000s.: (12.00...20.00) cm3/: 3.0 Mounting and assembly dimensions: Dispersion 1000s.: (3.0) Designation 1/min: 450 2nd speed mm: Shutoff **KF** mm: 5,6...6,0 electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 mm: 0,6...1,0 MS SVS max. mm: 1,7 1000s.: -LDA stroke mm: 6.2 3rd speed 1/min: 350 Del. quantity cm3/: 26.50...33.50 Remarks: 1000s.: (26.00...34.00) Shutoff Operate control lever after each electromagnet Volt: 12 manifold-pressure compensator pressure change. Load-dependent start of delivery: Inj.-qty.dif.measurement: * Correction at adjusting nut 1/min: 1400 1st speed Charge press. hPa: 800 Inj.-qty. cm3/ : 5.00 : 5.00...7.00 "

difference 1000s.: -

Note inst. in remarks column

: STE 4,0 H Test scheet Edition : 03.05.94 : 18.02.91 replaces Calibrating oil : ISO-4113

Injection pump : VE4/11F1100R94-1 Type number : 0 460 414 011

Customer Part-No. :

Customer-specific information Customer : STEYR

Engine : WD411.89/90

KW: 52 1/min: 1100 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina .

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed

Setting value mm: 5.20...5.60

Supply-pump pressure

1/min: 1000 Speed

Setting value bar: 5.20...5.80

Full-load del. w/out charge press.:

1/min: 1000 Speed

Del. quantity cm3/

1000s.: 73.5...74.5

Dispersion cm3/: 3.51000s.: (3.5)

Low-idle speed regulation

1/min: 300 Speed

Del. quantity cm3/ 1000s.: 11.50...15.50 Del. quantity cm3/: 3.5

1000s.: (3.5)

Full-load speed regulation

1/min: 1150 Speed

Del. quantity cm3/

1000s.: 50.00...56.00

Start:

Speed 1/min: 100 Del. quantity cm3%: 70.00...120.00 mind 100%s:: 70.00

mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100

TD travel mm: 5.90...6.70

mm: (5.60...7.00)

1/min: 1000 3rd speed

TD travel mm: 5.20...5.60

mm: (4.70...6.10)

4th speed 1/min: 500

mm: 0.90...1.50 TD travel

mm: (0.50...1.90)

Supply-pump pressure characteristic:

1st speed 1/min: 1100

Supply-pump

bar: 5.70...6.30 pressure

1/min: 1000 2nd speed

Supply-pump

pressure bar: 5.20...5.80

3rd speed 1/min: 500

Supply-pump

bar: 2.80...3.40 pressure

Overlow quantity at overflow valve:

1st speed 1/min: 500 Overflow : 41.70...83.40 cm3/10s: (26.70...98.40) quantity 1/min: 1080 2nd speed Overflow : 55.60...139.00 quantity cm3/10s: (40.60...153.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1270 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 1/min: 1170 4th speed Del. quantity cm3/: 10.00...56.00 1000s.: (10.00...56.00)
5th speed 1/min: 1150
Del. quantity cm3/: 50.00...56.00
1000s.: (47.00...59.00)
9th speed 1/min: 1080
Del. quantity cm3/: 72.00...75.00 1000s.: (71.00...76.00) 12th speed 1/min: 1000 Del. quyntity cm3/: 73.50...74.50 1000s.: (71.70...76.30) 1/min: 500 20th speed Del. quantity cm3/: 70.00...73.00 1000s.: (68.50...74.50) Mech. shutoff: Mech. Abstellung: 1st speed 1/min: 1080 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Idle delivery: 1/min: 300 1st speed Del. quantity cm3/: 11.50...15.50 1000s.: (9.50...17.50) Dispersion cm3/: 3.51000s.: (3.5) 2nd speed 1/min: 340 Del. quantity cm3/: 2.00...8.00 1000s.: (1.00...9.00) 3rd speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 170 Del. quantity cm3/: 70.00...120.00 1000s.: -

1/min: 300 Del. quantity cm3/: 40.00...70.00 1000s.: -

4th speed 1/min: 100 Del. quantity cm3/: 70.00...120.00 1000s.: -

Shutoff electromagnet:

Cut-in

: 10.0 min voltage Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3,2...3,4 mm: 5,1...5,5 KF MS mm: 0,8...1,2 SVS max. mm: 1,9 mm: 37.2...39.2 Ya. Yb mm: 52.4...57.4

.

Remarks:

2nd speed

Note inst. in remarks column

: SOF Test scheet : 28.04.94 Edition : 03.07.92 replaces

: ISO-4113 Calibrating oil

Injection pump : VE4/11F1900R350 : 0 460 414 070 Type number

Customer Part-No. :

Customer-specific information : IVECO-SOFIM Customer

: 8140.27.2780 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40...48 Electronically : 42...50

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250.00...253.00 Pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mn: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1100 Speed Charge press. hPa: 1000

Setting value mm: 2.20...2.60

Shutoff

electromagnet Volt: 12

Supr.'y-pump pressure

1/min: 1100 Speed hPa: 1000 Charge press

Setting value bar: 5.60...6.20

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1750 Speed Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 55.00...56.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500

Del. quantity cm3/

1000s.: 16.50...17.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 325 Speed

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 6.0 1000s.: (6.5)

Full-load speed regulation

1/min: 2100 Speed Charge press hPa: 1000 Del. quantity cm3/

1000s.: 19.50...25.50

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 40.00...80.00

1000s.: 40.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1300 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1900 Charge press. hPa: 1000 hPa: 1000 Charge press Inj.—qty. cm3/ difference 1000s.: 22.00...30.00' Shutoff Supply-pump electromagnet Volt: 12 bar: 7.60...8.20 pressure TD-travel dif.measurement Shutoff correttore anticipo iniezione (SV) electromagnet Volt: 12 1/min: 1300 1.Speed Charge press hPa: 1000 Overlow quantity at overflow valve: TD-travel mm: 1.90...2.10' difference 1/min: 500 1st speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 SP press.-dif.measurement Overflow : 41.70...83.40 quantity cm3/10s: (41.70...83.40) 2nd speed 1/min: 1900 pompa di mandata (FP) 1/min: 1300 1.Speed Charge press Supply pump hPa: 1000 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Overflow : 55.60...139.00 pressure difference bar: 0.10...0.30* Shutoff cm3/10s: (55.60...139.00) quantity electromagnet Volt: 12 Delivery-quant. and breakaway char.: Inspection pump test specifications Test specifications in parentheses 1nd speed 1/min: 800 Timing device characteristic: Charge-air pressure-setting point hPa: 400 2nd speed 1/min: 1900 LDA-stroke mm: 6.5* Charge press hPa: 1000 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 42.50...43.50
1000s.: (39.00...47.00)
2nd speed 1/min: 2350 TD travel mm: 7.10...7.90 mm: (6.80...8.20) Shutoff electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.20...2.60
mm: (1.70...3.10) Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00) 1/min: 2100 Shutoff electromagnet Volt: 12 5th speed 4th speed 1/min: 900 Charge press. hPa: 1000 Charge press hPa: 1000 Shutoff mm: 0.60...1.40 TD travel electromagnet Volt: 12 Del. quantity cm3/: 19.50...25.50 1000s.: (18.00...27.00) 8th speed 1/min: 2000 Charge press. hPa: 1000 Shutoff mm: (0.30...1.70) Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: electromagnet Volt: 12
Del. quantity cm3/: 40.00...48.00
1000s.: (38.00...50.00) 1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump 9th speed 1/min: 1900 bar: 3.60...4.20 pressure Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 2nd speed 1/min: 1100 electromagnet Volt: 12 Del. quantity cm3/: 51.00...56.00 Charge press. hPa: 1000 1000s.: (50.00...57.00) Supply-pump 1/min: 1750 12th speed bar: 5.60...6.20 pressure Charge press. hPa: 1000

M25

Shutott	+ injqty. cm3/: 18.0020.00*
electromagnet Volt: 12	+ difference 1000s.: (18.0020.00)
Del. quyntity cm3/: 55.0056.00	+ Shutoff
1000s.: (52.0059.00)	+ electromagnet Volt: 12
15th speed 1/min: 1500	+ 4th speed 1/min: 1300
Charge press. hPa: 1000	+ Charge press. hPa: 1000
Shutoff	This art 1000 70 001
	+ Injqty. cm3/: 22.0030.00'
electromagnet Volt: 12	+ difference 1000s.: (22.0030.00)
Del. quantity cm3/: 52.5057.50	+ Shutoff
1000s.: (51.0059.00)	+ electromagnet Volt: 12
17th speed 1/min: 1000	+ 5th speed 1/min: 1300
Charge press. hPa: 1000	Charge press. hPa: 1000
Shutoff	
	+ Injqty. cm3/: 2.008.00#
electromagnet volt: 12	+ difference 1000s.: (2.008.00)
Del. quantity cm3/: 49.5054.50	+ Shutoff
1000H.: (48.0056.00)	+ electromagnet Volt: 12
18th speed 1/min: 500	+ 2nd speed 1/min: 1300
Shutoff	+ Charge press. hPa: 1000
electromagnet Volt: 12	+ TD-travel : 1.902.10'
Del. quantity cm3/: 16.5017.50	+ difference mm: (1.902.10)
1000s.: (13.5020.50)	+ Shutoff
20th speed 1/min: 500	+ electromagnet Volt: 12
Charge press. hPa: 1000	+ 4th speed 1/min: 1300
Shutof?	+ Charge press. hPa: 1000
electromagnet Volt: 12	+ TD-travel : 2.002.80#
Del. quantity cm3/: 47.0056.00	+ difference mm: (2.002.80)
10008.: (46.0057.00)	
10003.: (40.0037.00)	+ 2nd speed 1/min: 1300
	+ Charge press. hPa: 1000
Mech. shutoff:	+ Supply pump-
	+ pressure : 0.100.30*
Electr. shutoff:	+ difference bar: (0.100.30)
	+ Shutoff
1st speed 1/min: 325	
	+ electromagnet Volt: 12
Del. quantity cm3/: 0.003.00	†
1000\$.: (0.003.00)	+ Part-load del.at 3rd injqty.
	+ terza fermo della portata
Idle delivery:	+ stop (EGR set)
	+ scarico) (ARF)
1st speed 1/min: 325	+ gaz d'échappement-ARF)
Shutoff	+ Spacing mm: 12.0
	T spacing min: 12.0
electromagnet Volt: 12	1 444 4000
Del. quantity cm3/: 10.0014.00	+ 1st speed 1/min: 1000
1000s.: (8.0016.00)	+ Charge press. hPa: 1000
Dispersion cm3/: 6.0	+ Shutoff
10008.: (6.5)	+ electromagnet Volt: 12
2nd speed 1/min: 450	+ Del. quantity cm3/: 6.107.10
Shutoff	
	1000s.: (3.1010.10)
electromagnet Volt: 12	†
Del. quantity cm3/: 0.005.00	+ Automatic starting fuel delivery:
1000\$.: (0.005.00)	+
5th speed 1/min: 250	+ 1st speed 1/min: 300
Del. quantity cm3/: 33.0043.00	+ Shutoff
10008.: (32.0044.00)	+ electromagnet Volt: 12
.0000:: \01:00:: \77:00/	
I nad donordant at at at the	Del. quantity cm3/: 50.0080.00
Load-dependent start of delivery:	† 1000s.: (50.0080.00)
Inj.—qty.dif.measurement:	† 2.4
A 1	+ 2nd speed 1/min: 400
2nd speed 1/min: 1300	+ Shutoff
Charge press. hPa: 1000	+ electromagnet Volt: 12
	1
	T C C C C C C C C C C C C C C C C C C C

Del. quantity cm3/: 20.00...50.00

1000s.: (20.00...50.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 40.00...80.00

1000s.: (40.00...80.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4
KF mm: K-OT
MS mm: 0.6...1.0
SVS max. mm: 0.8
LDA stroke mm: 6.5

Ya mm: 32.0...36.0 Yb mm: 42.9...47.1

Ajustement Potentiometer:

Angle for

pot. °: 25

Supply voltage

pot. volt: 5.0

Output volt

pot. volt: 1.0

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor—head end

Note inst. in remarks column

: FOR Test scheet Edition : 05.94

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R431-2 Type number : 0 460 414 088

Customer Part-No. :

Customer-specific information

Customer : FORD

: 2.51 DI MY 92 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating oil return temp.

with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 023 assembly

Opening

Pressure bar: 172.00...175.00

Perforated-plate

diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 0.78

mm: 0.73...0.83

Outlet : B

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250 Setting value mm: 2.50...2.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

Setting value bar: 5.60....6.20

Shutoff

electromagnet Volt: 12

Full-load del. with charge press .:

1/min: 500 Speed Charge press. hPa: HBA

Del. quantity cm3/ 1000s.: 30.5...31.5 VF"

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1000 Speed

Del. quantity cm3/

1000s.: 35.5...36.5 "E"

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/

1000s.: 16.00...20.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 100Cs.: (4.0)

Full-load speed regulation

1/min: 2100 Speed

Del. quantity cm3/

1000s.: 30.50...34.50

Shutoff

electromagnet Volt: 12 cm3/: 3.0 Dispersion 1000S.: (4.0)

Start:

1/min: 100 Speed

Del. quantity cm3/: 62.00...102.00

1000s.: 62.00 mind

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses Shutoff electromagnet Volt: 12 Del. quantity cm3/: ...10.0 1000s.: -Timing-device characteristic: 1/min: 1950 2nd speed Shutoff mm: 5.80...6.60 TD travel electromagnet Volt: 12 mm: (5.50 ..6.90) 1/min: 2200 5th speed Shutoff Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 electromagnet Volt: 12 Del. quantity cm3/: 18.00...26.00 mm: 2.50...2.90 TD travel 1000s.: (16.00...28.00) mm: (2.20...3.20) 8th speed 1/min: 2100 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 30.50...36.50 1000s.: (27.50...39.50) 9th speed 1/min: 1950 4th speed 1/min: 800 mm: 0.40...1.20 TD travel mm: (0.10...1.50) Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 37.7...41.3 "D" electromagnet Volt: 12 Supply-pump pressure characteristic: 1000s.: (37.0...42.0) 10th speed 1/min: 1700 1st speed 1/min: 500 Shutoff Supply-pump electromagnet Volt: 12 Del. quantity cm3/: 38.70...42.30 1000s.: (38.00...43.00) bar: 3.10...3.70 pressure Shutoff electromagnet Volt: 12 11th speed 1/min: 1000 1/min: 1000 2nd speed Shutoff Supply-pump electromagnet Volt: 12 Del. quantity cm3/: 35.5...36.5 "E" bar: 4.80...5.40 pressure Shutoff 1000s.: (33.5...38.5) electromagnet Volt: 12 1/min: 500 12th speed 1/min: 1250 3rd speed Shutoff Supply-pump electromagnet Volt: 12 bar: 5.60...6.20 Del. quyntity cm3/: 30.5...31.5 "F" pressure Shutoff 1000s.: (28.0...34.0) electromagnet Volt: 12 1/min: 1950 4th speed Mech. shutoff: Supply-pump pressure bar: 7.70...8.30 Electr. shutoff: Shutoff electromagnet Volt: 12 1st speed 1/min: 425 Del. quantity cm3/: 0.00...3.00 Overlow quantity at overflow valve: 1000s.: (0.00...3.00) Shutoff 1/min: 500 1st speed electromagnet volt: ~ Shutoff electromagnet Volt: 12 Idle delivery: : 97.30...141.70 Overflow cm3/10s: (82.30...156.70) quantity 1st speed 1/min: 425 2nd speed 1/min: 1950 Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 16.00...20.0 1000s.: (14.00...22.00) Dispersion cm3/: 3.0 electromagnet Volt: 12 : 115.30...184.80 Overflow quantity cm3/10s: (130.30...199.80) 1000s.: (4.0) Delivery-quant. and breakaway char.: 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 2nd speed 1/min: 2400

NO1

Del. quantity cm3/: 5.00...13.00 1000s.: (3.00...15.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 30.00...60.00

1000s.: (30.00...60.00)

1/min: 480 2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 24.00...34.00

1000s.: (24.00...34.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 62.00...102.00

1000s.: (62.00...102.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: KOT

mm: 1.3...1.7 mm: 1.7 MS

SVS max.

Ya mm: 42.8...45.8 Yb mm: 55.7...67.7

Remarks:

Ya = Distance between VE flange and speed-control lever in idle

position

Measurement point = edge of control

lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed

position

Measurement point = edge of control

lever on distributor-head end

XK = 15.65...17.65 mm

XL = 10.90...14.30 mm

(For installation of part-load

NO2

governor 1 463 161 798 and enginespeed control lever 1 461 901 442).

Pump/engine assignment:

Stroke in blocking position 0.73... 0.83 mm, referenced to outlet "B".

Attach timing device cover

KDEP 1151.

Note inst. in remarks column

Test scheet : FOR Edition : 04.05.94

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R415-3 Type number : 0 460 414 107

Customer Part-No. :

Customer-specific information

Customer

: FORD

Engine

: 2.5 DI MARINE

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil return temp.

with thermometer : 44.00...46.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 114 assembly

Coening

Pressure bar: 207.00...210.00

Perforated-plate

diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 0.31

mm: 0.26...0.36

Outlet : B

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed Setting value mm: 4.80...5.00

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

Setting value bar: 6.30...6.90

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 500 Charge press. hPa: HBA

Del. quantity cm3/

1000s.: 41.1...41.5 "F"

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1000 Speed

Del. quantity cm3/

1000s.: 43.60...44.60

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/ 1000s.: 10.00...12.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0)

Full-load speed regulation

1/min: 2200 Speed

Del. quantity cm3/

1000s.: 24.30...26.30

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 65.00...105.00

mind 1000s.: 65.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic: Del. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00) 1/min: 2000 mm: 7.70...8.50 mm: (7.40...8.8G) 2nd speed 5th speed 1/min: 2200 TD travel Shutoff electromagnet Volt: 12 Del. quantity cm3/: 24.30...26.30 Shutoff 1000s.: (20.30...30.30) 1/min: 2100 electromagnet Voit: 12 1/min: 1250 3rd speed 6th speed mm: 4.80...5.00 TD travel Shutoff mm: (4.40...5.40) electromagnet Volt: 12 Del. quantity cm3/: 34.6...40.6 1000s.: (31.6...43.6) Shutoff electromagnet Volt: 12 1/min: 800 4th speed 1/min: 1950 7th speed TD travel mm: 2.20...3.00 Shutoff mm: (1.90...3.30) electromagnet Volt: 12 Del. quantity cm3/: 44.2...46.6 "D" 1000S.: (42.9...47.9) Shutoff electromagnet Volt: 12 8th speed 1/mir: 1700 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 1st speed 1/min: 2000 Del. quantity cm3/: 45.80...48.20 Supply-pump 1000s.: (44.50...49.50) pressure bar: 8.00...8.60 1/min: 1000 9th speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 1/min: 1250 2nd speed Del. quantity cm3/: 43.6...45.6 "E" Supply-pump 1000s.: (41.60...46.60) bar: 6.30...6.90 1/min: 500 pressure 10th speed Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 41.1...41.5 "F" electromagnet Volt: 12 1/min: 1000 3rd speed Supply-pump 1000s.: (38.3...44.3) bar: 5.80...6.40 pressure Shutoff Mech. shutoff: electromagnet Volt: 12 1/min: 500 4th speed Electr. shutoff: Supply-pump bar: 4.70...5.30 1st speed pressure 1/min: 425 Shutoff Del. quantity cm3/: 0.00...3.00 electromagnet Volt: 12 160Gs.: (6.00...3.00) Shutoff Overlow quantity at overflow valve: electromagnet volt: -1st speed 1/min: 500 Idle delivery: Shutoff electromagnet Volt: 12 1/min: 425 1st speed : 97.20...113.80 Overflow Shutoff cm3/10s: (82.20...128.80) quantity electromagnet Volt: 12 2nd speed 1/min: 1950 Del. quantity cm3/: 10.00...12.00 Shutoff 1000s.: (7.00...15.00) cm3/: 3.0 electromagnet Volt: 12 Dispersion : 115.20...184.70 Overflow 1000s.: (4.0) cm3/10s: (100.20...199.70) quantity 2nd speed 1/min: 500 Shutoff Delivery-quant. and breakaway char.: electromagnet Volt: 12 Del. quantity cm3/: 0.00...10.1 1000s.: -2nd speed 1/min: 2400 Shutoff Part-load del.at 3rd inj.-gty. electromagnet Volt: 12 terza fermo della portata

NO4

stop (EGR set) scarico) (ARF)

gaz d'échappement-ARF) Spacing mm: 20.0

1st speed 1/min: 1250

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 10.7...11.7 1000s.: (8.70...13.70)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 66.00...96.00

1000s.: (66.00...96.00)

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 36.00...46.00 1000s.: (36.00...46.00)

1/min: 100 4th speed

Shutoff

electromagnet Volt: 12

Del. quantity an3/: 65.00...105.00

1000s.: (65.00...105.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 2.7...2.9 K KF mm: KOT MS mm: 1.6...2.0

mm: 42.8...45.8 Ya mm: 63.0...76.0 Yb

Remarks:

: FB = KDEP 1151

Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control

lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control

lever on distributor-head end

F = Adjustment point for low full-load

delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA

adjusting screw).

D = Adjustment point for high full-

load delivery

NO5

Note inst. in remarks column

Test scheet : FOR Edition : 04.05.94

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R567 Type number : 0 460 414 108

Customer Part-No. :

Customer-specific information

Customer : FORD

: 2.5 DI Engine

Power KW: 57

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating oil return temp.

with thermometer : 44.00...46.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 114 assembly

Opening

Pressure bar: 207.00...210.00

Perforated-plate

diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -

(from BDC): -

Start of delivery block Piston stroke mm: 0.52

mm: 0.47...0.57

Outlet

Injection pump setting values Test specifications in parentheses Timing-device travel

1/min: 1250 Setting value mm: 2.60...2.80

Shutof有

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

Setting value bar: 6.90...7.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 500 Speed Charge press. nPa: HBA

Del. quantity cm3/ 1000s.: 25.3...25.7 "F"

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1000

Del. quantity cm3/

1000s.: 33.5...34.5 "E"

Shurtoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000S .: (4.0)

Low-idle speed regulation

1/min: 425 Speed

Del. quantity cm3/ 1000s.: 6.00...8.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2200

Del. quantity cm3/

1000s.: 22.00...24.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 26.00...66.00 mind 1000s.: 26.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications

N06

Test specifications in parentheses Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00) 5th speed 1/min: 2200 Timing device characteristic: 1/min: 2000 2nd speed mm: 4.90...5.70 TD travel Shutoff mn: (4.60...6.00) electromagnet Volt: 12 Shutoff Del. quantity cm3/: 22.00...24.00 electromagnet Volt: 12 1000s.: (18.00...28.00) 1/min: 1250 3rd speed 6th speed 1/min: 2140 mm: 2.60...2.80 TD travel Shutoff mm: (2.20...3.20) electromagnet Volt: 12 Del. quantity cm3/: 26.5...32.5 1000s.: (23.5...35.5) 7th speed 1/min: 1950 Shutoff electromagnet Volt: 12 4th speed 1/min: 800 7th speed mm: 0.50...1.30 TD travel Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.8...38.2 'D' mm: (0.20...1.60) Shutoff 1000s.: (34.5...39.5) electromagnet Volt: 12 8th speed 1/min: 1700 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 36.30...38.70 1000s.: (35.00...40.00) 1/min: 2000 1st speed Supply-pump bar: 8.60...9.20 pressure 1/min: 1000 9th speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 33.5...34.5 "E" 1/min: 1250 2nd speed 1000s.: (31.50...36.50) Supply-pump pressure bar: 6.90...7.50 10th speed 1/min: 500 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 25.3...25.7 "F" 1/min: 1000 3rd speed Supply-pump 1000s.: (22.5...28.5) bar: 6.40...7.10 pressure Shutoff Mech. shutoff: electromagnet Volt: 12 1/min: 500 4th speed Electr. shutoff: Supply-pump bar: 5,20...5.80 pressure 1st speed 1/min: 425 Shutoff Del. quantity cm3/: 0.00...3.00 electromagnet Volt: 12 1000s.: (0.00...3.00) Shutoff Overlow quantity at overflow valve: electromagnet volt: -1/min: 500 1st speed Idle delivery: Shutoff electromagnet Volt: 12 1st speed 1/min: 425 : 97.20...113.80 Overflow Shutoff quantity cm3/10s: (82.20...128.80) electromagnet Volt: 12 Del. quantity cm3/: 6.00...8.00 1000s.: (3.00...11.00) Dispersion cm3/: 3.0 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 : 115.20...184.70 Overflow 1000s.: (4.0) cm3/10s: (100.20...199.70) 1/min: 500 quantity 2nd speed Shutoff Delivery-quant. and breakaway char.: electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.0 1000s.: -1/min: 2400 2nd speed

Part-load del.at 3rd ini.-gty. terza fermo della portata stop (EGR set) scarico) (ARF)

gaz d'échappement-ARF) Spacing mm: 20.0

1st speed 1/min: 1250

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 20.8...21.8 1000s.: (18.89...23.80)

Automatic starting fuel delivery:

1/min: 300 1st speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 26.00...56.00

1000s.: (26.00...56.00)

1/min: 480 2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 19.00...29.00

1000s.: (19.00...29.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 26.00...66.00 1000s.: (26.00...66.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 : 12.0 Rated voltage

Mounting and assembly dimensions:

Designation

mm: 2.7...2.9 KF mm: KOT MS mm: 1.6...2.0 mm: 42.8...45.8 Ya mm: 59.5...71.5 Yb

Remarks:

: FB = KDEP 1151

Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control

lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed

position Measurement point = edge of control lever on distributor-head end

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA

adjusting screw). D = Adjustment point for high full-

load delivery

N08

Note inst. in remarks column

Test scheet : SOF

Edition : 04.05.94

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R573 Type number : 0 460 414 109

Customer Part-No. :

Customer-specific information

Customer : IVECO-SOFIM "DI"

Engine : 8140.07.3700

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil return temp.

with thermometer : 44.00...46.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250.00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1600 Speed

Setting value mm: 3.20...3.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1100 Speed Setting value bar: 6.0...6.6

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1100 Speed

Del. quantity cm3/ 1000s.: 47.50...48.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.5 1000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/ 1000s.: 10.50...14.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (6.5)

Full-load speed regulation

1/min: 2200 Speed

Del. quantity cm3/

1000s.: 28.00...32.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

9el. quantity ch3/: 40.00...80.00 mind 1000s.: 40.00

Shutoff

electromagnet Volt: 12

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800

TD travel mm: 3.40...4.00

mm: (3.00...4.40)

Shutoff

electromagnet Volt: 12 3rd speed

1/min: 1600 mm: 3.20...3.40 TD travel

mm: (2.60...4.00)

Shutoff

electromagnet Volt: 12 1/min: 1200 4th speed

mm: 0.20...0.80 TD travel Shutoff mm: (0.00...1.20) electromagnet Volt: 12 Shutoff Del. quantity cm3/: 28.00...32.00 electromagnet Volt: 12 5th speed 1/min: 2000 1000s.: (25.50...34.50) 1/min: 2150 8th speed mm: 4.20...4.80 TD travel Shutoff electromagnet Volt: 12 Del. quantity cm3/: 34.00...42.00 1000s.: (32.00...44.00) mn: (3.80...5.20) Shutoff electromagnet Volt: 12 1/min: 500 1/min: 2000 9th speed 9th speed mm: 1.80...3.20 TD travel Shutoff mm: (1.50...3.50) electromagnet Volt: 12 Del. quantity cm3/: 44.50...49.50 1000s.: (43.50...50.50) 10th speed 1/min: 1500 Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 47.00...52.00 1000s.: (46.00...53.00) ist speed 1/min: 500 Supply-pump bar: 4.00...4.60 pressure 1/min: 500 12th speed Shutoff Shutoff electromagnet Volt: 12 2nd speed 1/min: 1100 electromagnet Volt: 12 Del. quyntity cm3/: 32.50...33.50 1000s.: (29.50...36.50) Supply-pump bar: 6.00...6.60 18th speed 1/min: 1100 pressure Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 1/min: 2000 Del. quantity cm3/: 47.50...48.50 1000s.: (44.50...51.50) 3rd speed Supply-pump bar: 8.40...9.00 pressure Shutoff Mech. shutoff: electromagnet Volt: 12 4th speed 1/min: 500 Electr. shutoff: Supply-pump bar: 7.00...8.00 pressure Shutoff electromagnet Volt: 12 1000s.: (0.00...3.00) Shutoff Overlow quantity at overflow valve: electromagnet volt: -1st speed 1/min: 500 Idle delivery: Shutoff electromagnet Volt: 12 1/min: 350 1st speed : 88.90...133.40 Overflow Shutoff quantity 2nd speed cm3/10s: (73.90...148.40) electromagnet Volt: 12 1/min: 2000 Del. quantity cm3/: 10.50...14.50 Shutoff 1000s.: (8.50...16.50) electromagnet Volt: 12 cm3/: 3.0 Dispersion 1000s.: (6.5) 1/min: 450 : 83.40...194.60 Overflow quantity cm3/10s: (68.40...209.60) 2nd speed Shutoff Delivery-quant. and breakaway char.: electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 1/min: 2350 2nd speed 1/min: 325 3rd speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 5th speed 1/min: 2200 Del. quantity cm3/; 19.00...29.00 1000s.: (18,00...30.00)

N10

Automatic starting fuel delivery:

1/min: 300 1st speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 55.00...95.00 1000s.: (55.00...95.00)

2nd speed 1/min: 450

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 10.00...40.00

1000s.: (10.00...40.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Det. quantity cm3/: 40.00...80.00 1000s.: (40.00...80.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3.4...3.6 K KF mm: KOT MS mm: 1.0...1.4 Ya mm: 36.9...41.9 Yb mm: 44.4...49.6

Remarks:

Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end

Starting delivery check V = Speed-control lever in full-load position

Note inst. in remarks column

Test scheet : SOF

Edition : 05.05.94

replaces

Calibrating oil : ISO-4113

: VE4/11F1900R522-1 Injection pump

Type number : 0 460 414 110

Customer Part-No. :

Customer-specific information

"DI" : IVECO-SOFIM Customer

Engine : 8142.27.3800

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil

return temp.

with thermometer : 44.00...46.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250.00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00

x Wall thickness : 2.00

x Length

mm: 450

Start of delivery

Prestroke mm: -

(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400 Charge press. hPa: 1200

Setting value mm: 2.90...3.10

Supply-pump pressure

1/min: 1400 Speed Charge press hPa: 1200

Setting value bar: 6.60...7.20

Full-load del. with charge press.:

1/min: 1750 Speed Charge press. hPa: 1200

Del. quantity cm3/

1000s.: 50.50...51.50

cm3/: 4.0 dispersion

1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 550

Del. quantity cm3/

1000s.: 26.00...27.00

Low-idle speed regulation

Speed 1/min: 300

Del. quantity cm3/

1000s.: 8.00...12.00

Del. quantity cm3/: 6.0

1000s.: (6.5)

Full-load speed regulation

Speed 1/min: 2100

hPa: 1200 Charge press Del. quantity cm3/

1000s.: 33.00...37.00

Start:

Speed 1/min: 100

Dei. quantity cm3/: 40.00...90.00

1000s.: 40.00

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1400

Charge press hPa: 1200

Inj.-qty. cm3/

difference 1000s.: -18.0..-26.0 "

TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1400 1.Speed Charge press hPa: 1200

TD-travel

difference mm: -0.7...-0.9 "

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

_	
2nd speed 1/min: 1750	+ 8th speed 1/min: 2000
Charge press hPa: 1200	
charge press fire. 1200	+ Charge press. hPa: 1200
TD travel mm: 5.305.90	+ Del. quantity cm3/: 43.0051.00
mm: (4.90. , .6.30)	† 1000s.: (41.0053.00)
3rd speed 1/min: 1400	
	+ 9th speed 1/min: 1900
Charge press hPa: 1200	+ Charge press. hPa: 1200
TD travel mm: 2.903.10	- Del. quantity cm3/: 48.5053.50
(2.70)	40000 (17 CO C/ CO)
mm: (2.303.70)	† 1000s.: (47.5054.50)
4th speed 1/min: 1250	+ 12th speed 1/min: 1750
Charge press hPa: 1200	Charge press. hPa: 1200
Th +novel 4 40 2 20	T charge press. Hra. 1200
TD travel mm: 1.602.20	+ Del. quyntity cm3/: 50.5051.50
mm: (1.202.60)	+ 1000s.: (47.5054.50)
5th speed 1/min: 1900	+ 15th speed 1/min: 1000
Charge press. hPa: 1200	+ Charge press. hPa: 1200
TD travel mm: 5.305.90	pel. quantity cm3/: 45.0050.00
mm: (4.906.30)	10005.: (43.5051.50)
mii. (4.700.30)	
	† 16th speed 1/min: 800
Supply-pump pressure characteristic:	+ Charge press. hPa: -
and the state of t	Dol
4-1 . 1 4/1 000	+ Del. quantity cm3/: 26.5031.50
1st speed 1/min: 800	+ 1000H.: (25.5032.50)
Charge press. hPa: 1200	+ 18th speed 1/min: 550
Supply-pump	
July Cy Dully	+ Charge press. hPa: -
pressure bar: 3.804.40 2nd speed 1/min: 1400	+ Del. quantity cm3/: 26.0027.00
2nd speed 1/min: 1400	+ 1000s.: (23.0030.00)
Change proces has 1200	
Charge press. hPa: 1200	+ 20th speed 1/min: 800
Supply-pump	† Charge press. hPa: 1200
pressure bar: 6.607.20	+ Del. quantity cm3/: 45.5054.50
3rd speed 1/min: 1900	40000 . (11 EG EE EG)
	† 1000s.: (44.5055.50)
Charge press. hPa: 1200	+
Supply-pump	+ Mech. shutoff:
odes bank	
nnoon hone 9 70 0 70	Manda Alandan Hanana
pressure bar: 8.709.30	+ Mech. Abstellung:
pressure bar: 8.709.30	+ Mech. Abstellung:
•	+
pressure bar: 8.709.30 Overlow quantity at overflow valve:	1st speed 1/min: 1900
Overlow quantity at overflow valve:	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00
•	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00
Overlow quantity at overflow valve: 1st speed 1/min: 800	1st speed 1/min: 1900
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 10005: (0.003.00)
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 10005: (0.003.00)
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery:
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00)
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70)	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5)
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70)	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70)	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70)	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quant. and breakaway char.: 1nd speed 1/min: 800*	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00)
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quarit. and breakaway whan: 1nd speed 1/min: 800* Charge—air pressure—setting	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery:
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quant. and breakaway whan: 1nd speed 1/min: 800* Charge—air pressure—setting point hPa: 600	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00)
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quarit. and breakaway whan: 1nd speed 1/min: 800* Charge—air pressure—setting point hPa: 600 LDA—stroke mm: 6.2	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery:
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quarit. and breakaway whan: 1nd speed 1/min: 800* Charge—air pressure—setting point hPa: 600 LDA—stroke mm: 6.2	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement:
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow: 75.00119.50 quantity: cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow: 97.30180.70 quantity: cm3/10s: (82.30195.70) Delivery—quarit. and breakaway char.: 1nd speed 1/min: 800* Charge-air pressure—setting point: hPa: 600 LDA—stroke: mm: 6.2 Del. quantity: cm3/: 45.5046.50	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow: 75.00119.50 quantity: cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow: 97.30180.70 quantity: cm3/10s: (82.30195.70) Delivery—quant. and breakaway whan: 1nd speed 1/min: 800* Charge—air pressure—setting point: hPa: 600 LDA—stroke: mm: 6.2 Del. quantity: cm3/: 45.5046.50 1000s.: (42.0050.00)	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow: 75.00119.50 quantity: cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow: 97.30180.70 quantity: cm3/10s: (82.30195.70) Delivery—quarit. and breakaway char.: 1nd speed 1/min: 800* Charge-air pressure—setting point: hPa: 600 LDA—stroke: mm: 6.2 Del. quantity: cm3/: 45.5046.50	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quarit. and breakaway whan: 1nd speed 1/min: 800* Charge-air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50 1000s.: (42.0050.00) 2nd speed 1/min: 2300	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000s.: (6.0014.00) Dispersion cm3/: 6.0 1000s.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0#
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quant. and breakaway char.: 1nd speed 1/min: 800* Charge-air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50 1000s.: (42.0050.00) 2nd speed 1/min: 2300 Charge press. hPa: 1200	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0# difference 1000S.: -
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quant. and breakaway char.: 1nd speed 1/min: 800* Charge—air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50 1000s.: (42.0050.00) 2nd speed 1/min: 2300 Charge press. hPa: 1200 Del. quantity cm3/: 0.003.00	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0# difference 1000S.: - 2nd speed 1/min: 1400
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quant. and breakaway char.: 1nd speed 1/min: 800* Charge—air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50 1000s.: (42.0050.00) 2nd speed 1/min: 2300 Charge press. hPa: 1200 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0# difference 1000S.: - 2nd speed 1/min: 1400
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quant. and breakaway char.: 1nd speed 1/min: 800* Charge—air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50 1000s.: (42.0050.00) 2nd speed 1/min: 2300 Charge press. hPa: 1200 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0# difference 1000S.: - 2nd speed 1/min: 1400 Charge press. hPa: 1200 Charge press. hPa: 1200
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quarit. and breakaway whan: 1nd speed 1/min: 800* Charge-air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50 1000s.: (42.0050.00) 2nd speed 1/min: 2300 Charge press. hPa: 1200 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) 5th speed 1/min: 2100	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0# difference 1000S.: 2nd speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: 0.03.0 'Z
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quant. and breakaway char.: 1nd speed 1/min: 800* Charge-air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0# difference 1000S.: - 2nd speed 1/min: 1400 Charge press. hPa: 1200 Charge press. hPa: 1200
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quant. and breakaway char.: 1nd speed 1/min: 800* Charge-air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0# difference 1000S.: 2nd speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: 0.03.0 'Z
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quarit. and breakaway whan: 1nd speed 1/min: 800* Charge air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50 1000S.: (42.0050.00) 2nd speed 1/min: 2300 Charge press. hPa: 1200 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) 5th speed 1/min: 2100 Charge press. hPa: 1200 Del. quantity cm3/: 33.0037.00	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 360 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0# difference 1000S.: - 2nd speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: 0.03.0 'Z difference 1000S.: -
Overlow quantity at overflow valve: 1st speed 1/min: 800 Charge press. hPa: 1200 Overflow : 75.00119.50 quantity cm3/10s: (60.00124.50) 2nd speed 1/min: 1900 Charge press. hPa: 1200 Overflow : 97.30180.70 quantity cm3/10s: (82.30195.70) Delivery—quant. and breakaway char.: 1nd speed 1/min: 800* Charge-air pressure—setting point hPa: 600 LDA—stroke mm: 6.2 Del. quantity cm3/: 45.5046.50	1st speed 1/min: 1900 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: -19.021.0# difference 1000S.: 2nd speed 1/min: 1400 Charge press. hPa: 1200 Injqty. cm3/: 0.03.0 'Z

correttore anticipo iniezione (SV):

1st speed 1/min: 1400 Charge press. hPa: 1200

TD-travel : -1.0...-1.8 1

difference

SP press.-dif.measurement: pompa di mandata (FP):

1st speed 1/min: 1400 Charge press. hPa: 1200

Supply pump-

pressure : -0.1...-0.3 #

difference bar: -

Automatic starting fuel delivery:

1st speed 1/min: 200

Del. quantity cm3/: 55.00...105.00

1000s.: (55.00...105.00)

2nd speed 1/min: 500

Det. quantity cm3/: 14.00...30.00 1000s.: (14.00...30.00)

1/min: 100 4th speed

Del. quantity cm3/: 40.00...90.00

1000s.: (40.00...90.00)

Mounting and assembly dimensions:

Designation

K mm: VK KF mm: KOT

mm: 1.3...1.6 MS1

LDA stroke mm: 6.2

mm: 37.9...39.9 Ya Yb mm: 44.3...50.1

Remarks:

Ya = Distance between VE flange and speed-control lever in idle

position

Measurement point = edge of control

tever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed

position

Measurement point = edge of control

lever on distributor-head end

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Z = Absolute delivery

M14

Note inst. in remarks column

Test scheet : SOF Edition : 05.94

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R521-1 Type number : 0 460 414 112

Customer Part-No. :

Customer-specific information Customer : IVECO-SOFIM

: 8140.27.2560 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil return temp.

with thermometer : 44.00...46.00

Electronically

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 C27

Opening

bar: 250.00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1400 Speed Charge press. hPa: 1200 Setting value mm: 2.60...2.80

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400 Charge press hPa: 1200

Setting value bar: 7.20...7.80

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750 Charge press. hPa: 1200 Del. quantity cm3/ 1000s.: 47.50...48.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550

Del. quantity cm3/

1000s.: 26.00...27.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 300 Speed

Del. quantity cm3/

1000s : 8.00...12.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 6.0 10005.: (6.5)

Full-load speed regulation

Speed 1/min: 2100 Charge press inPa: 1200
Del. quantity cm3/
1000S.: 33.00...37.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 40.00...90.00

1000s.: 40.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1400 hPa: 1200 Speed Charge press. hPa: 1200 Charge press Supply-pump cm3/Inj.-qty. bar: 8.70...9.30 pressure difference 1000s.: -21.0...-27.0 # Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 TD-travel dif.measurement Overlow quantity at overflow valve: correttore anticipo iniezione (SV) 1. Speed 1/min: 1400 1st speed 1/min: 800 Charge press. hPa: 1200 Shutoff Charge press hPa: 1200 TD-travel mm: -0.7...-0.9 # difference electromagnet Volt: 12 75.00...119.00 Shutoff Overflow | cm3/10s: (60.00...134.00) electromagnet Volt: 12 quantity 2nd speed 1/min: 1900 Inspection-pump test specifications Charge press. hPa: 1200 Test specifications in parentheses Shutoff electromagnet Volt: 12 : 97.00...180.00 Timing device characteristic: Overflow . cm3/10s: (82.00...195.00) quantity 2nd speed 1/min: 1750 hPa: 1200 Charge press Delivery-quant. and breakaway char.: TD travel mm: 4.70...5.30 mm: (4.30...5.70) Shutoff 1nd speed 1/min: 800* electromagnet Volt: 12 Charge-air pressure-setting 1/min: 1400 hPa: 1200 mm: 2.60...2.80 3rd speed point hPa: 450 Charge press LDA-stroke film: TD travel Shutoff mm: (2.00...3.40) electromagnet Volt: 12 Shutoff Del. quantity cm3/: 41.00...42.00 electromagnet Volt: 12 1000s.: (38.00...45.00) 2nd speed 1/min: 2300 Charge press. hPa: 1200 1/min: 1250 4th speed Charge press hPa: 1200 TD travel mm: 1.30...1.90 Shutoff mm: (0.90...2.30) electromagnet Volt: 12 1000S:: (0.00...3.00)
5th speed 1/min: 2100
Charge press. hPa: 1200
Shutoff Shutoff elestromagnet Volt: 12 5th speed 1/min: 1900 Charge press. hPa: 1200 mm: 5.30...5.90 mm: (4.90...6.30) TD travel electromagnet Volt: 12 Del. quantity cm3/: 33.00...37.00 Shutoff 1000s.: (30.50...39.50) 1/min: 2000 electromagnet Volt: 12 8th speed Supply-pump pressure characteristic: Charge press. hPa: 1200 Shutoff 1st speed 1/min: 800 electromagnet Volt: 12 Del. quantity cm3/: 41.00...49.00 1000s.: (39.00...51.00) 9th speed 1/min: 1900 Charge press. hPa: 1200 Shutoff Charge press. hPa: 1200 Supply-pump pressure bar: 5.30...5.90 Shutoff electromagnet Volt: 12 electromagnet Volt: 12
Del. quantity cm3/: 45.50...50.50
1000S.: (44.50...51.50) 1/min: 1400 2nd speed Charge press. hPa: 1200 Supply-pump bar: 7.20...7.80 pressure 12th speed 1/min: 1750 Shutoff Charge press. hPa: 1200 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1900 electromagnet Volt: 12

Del. quyntity cm3/: 47.5048.50	
	- Shutoff
1000s.: (44.5051.50)	- electromagnet Volt: 12
15th mond 1/min 1000	
15th speed 1/min: 1000	- 3rd speed 1/min: 1400
Charge press. hPa: 1200	- Charge press. hPa: 1200
Shutoff	- Injqty. cm3/: -21.027.0#
	difference 40000 . (50 0
alectromagnet Volt: 12	- difference 1000s.: (-20.028.0)
Del. quantity cm3/: 44.5049.50	- Shutoff
1000s.: (43.0051,00)	- electromagnet Volt: 12
16th speed 1/min: 800	
	- 5th speed 1/min: 1400
Charge press. hPa: -	- Charge press. hPa: 1200
Shutoff	- Injqty. cm3/: 0.003.00'Z
electromagnet volt: 12	
	- difference 1000s.: (0.003.00)
Del. quantity cm3/: 26.0031.00	- Shutoff
1000H.: (25.0032.00)	- electromagnet Volt: 12
18th speed 1/min: 550	occur analysis to ter te
Charge press. hPa: -	- TD-travel dif.measurement:
Shutoff	correttore anticipo iniezione (SV):
electromagnet Volt: 12	
teeti diagret vott. 12	- 1st speed 1/min: 1400
Del. quantity cm3/: 26.0027.00	- Charge press. hPa: 1200
1000s.: (23.0030.00)	- TD-travel : -0.70.9 #
20th speed 1/min: 800	- difference mm: $(-0.700.90)$
Charge press. hPa: 1200	- Shutoff
Shutoff	- electromagnet Volí: 12
electromagnet Volt: 12	- 3rd speed 1/min: 1400
Del. quantity cm3/: 44.5053.50	- Charge press. hPa: 1200
1000s.: (43.5054.50)	- TD-travel : -1.01.8 '
	- difference mm: (-1.001.80)
Mach abuself.	
Mech. shutoff:	- Shutoff
4	- electromagnet Volt: 12
Electr. shutoff:	
Decour. Singeria	CD
†	- SP pressdif.measurement:
1st speed 1/min: 300	- pompa di mandata (FP):
Del. quantity cm3/: 0.003.00	- 1st speed 1/min: 1400
10005.: (0.003.00)	rat apeed 17mm, 1400
10005.: (0.005.00)	Channa annua 1.0 4200
	- Charge press. hPa: 1200
Shutoff	
	- Supply pump-
Shutoff electromagnet volt: -	- Supply pump- - pressure : -0.10.3 "
electromagnet volt: -	- Supply pump- - pressure : -0.10.3 " - difference bar: -
	- Supply pump- - pressure : -0.10.3 " - difference bar: - - Shutoff
electromagnet volt: -	- Supply pump- - pressure : -0.10.3 " - difference bar: - - Shutoff
electromagnet volt: - Idle delivery:	- Supply pump- - pressure : -0.10.3 " - difference bar: -
electromagnet volt: - Idle delivery: 1st speed 1/min: 300	- Supply pump pressure : -0.10.3 " - difference bar: Shutoff - electromagnet Volt: 12
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff	- Supply pump- - pressure : -0.10.3 " - difference bar: - - Shutoff
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff	- Supply pump pressure : -0.10.3 " - difference bar: Shutoff - electromagnet Volt: 12
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery:
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000s.: (6.0014.00)	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000s.: (6.0014.00) Dispersion cm3/: 6.0 1000s.: (6.5) 2nd speed 1/min: 425 Shutoff	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 1000S.: (55.00105.00)
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 1000s.: (55.00105.00) 2nd speed 1/min: 500
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000s.: (6.0014.00) Dispersion cm3/: 6.0 1000s.: (6.5) 2nd speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 1000s.: (55.00105.00) 2nd speed 1/min: 500 Shutoff
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 1000s.: (55.00105.00) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000s.: (6.0014.00) Dispersion cm3/: 6.0 1000s.: (6.5) 2nd speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 1000s.: (55.00105.00) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00)	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery:	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 1000s.: (55.00105.00) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00)	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00 1000s.: (14.0030.00)
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery:	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00 1000s.: (14.0030.00)
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000S.: (6.0014.00) Dispersion cm3/: 6.0 1000S.: (6.5) 2nd speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement:	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00 1000s.: (14.0030.00) 4th speed 1/min: 100
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00 1000s.: (6.0014.00) Dispersion cm3/: 6.0 1000s.: (6.5) 2nd speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Load-dependent start of delivery: Injqty.dif.measurement: 1st speed 1/min: 1400	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00 1000s.: (14.0030.00) 4th speed 1/min: 100 Shutoff
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00 1000s.: (14.0030.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00)
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.0090.00
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00)
electromagnet volt: - Idle delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0012.00	Supply pump- pressure : -0.10.3 " difference bar: - Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00105.00 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.0030.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.0090.00

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: KF mm: K1
MS mm: -

MS1 mm: 1.29-1.54

SVS max. mm: -

XX mm: 20.0...22.0 XL mm: 15.0...18.4 Ya frm: 37.9...39.9 Yb mm: 44.9...50.7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Z = Absolute delivery

Pump with slave plunger

Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point: = edge of control lever on distributor-head end

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES
Calibrating—oil return temperature with thermometer, °C :45

Calibrating-oil inlet

temperature, °C :35...40

Dwell speed, 1/min :1100 Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500 Temperature stabilisation

speed 1/min :2100 Output temperature, °C :51 Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation speed 1/min :2100 Output temperature, *C :48 Measurement temperature, *C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2100/100

Output temperature, °C :45 Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100 Output temperature, °C :42 Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100 Output temperature, °C :41 Measurement temperature, °C:43

Note inst. in remarks column

: FOR Test scheet Edition : 05.05.94

replaces

Calibrating oil : ISO-4113

: VE4/11F20C0R567-1 Injection pump : 0 460 414 113 Type number

Customer Part-No. :

Customer-specific information Customer : FORD

Engine : 2.5L DI (70 PS)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil return temp.

with thermometer : 44.00...46.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 114 assembly

Openina

bar: 207.00...210.00 Pressure

Perforated-plate

diameter tim: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 0.43

mm: +-0.04(0.06)

Outlet : B

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 2.40...2.60

Shutoff

electromagnet Volt: 📆

Supply-pump pressure

1/min: 1150 Speed

Setting value bar: 7.10...7.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500

Del. quantity cm3/

1000s.: 28.3...28.7 "F"

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1150 Speed

Del. quantity cm3/

1000s.: 35.0...36.0 "E"

Shutoff

electromagnet Volt: 12 cm3/: 3.0 Dispersion 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/

1000s.: 6.00...8.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0)

Full-load speed regulation

1/min: 2200 Speed

Del. quantity cm3/ 1000s.: 33.00...35.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (4.0)

Start:

Speed 1/min: 100 Del. quantity cm3/: 30.00...70.00

1000s.: 30.00 mind

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

electromagnet Volt: 12 Del. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00) 3rd speed 1/min: 2300 Timing-device characteristic: 2nd speed 1/min: 2000 mm: 5.60...6.40 TD travel Shutoff min: (5.30...6.70) electromagnet Volt: 12
Del. quantity cm3/: 18.00...24.00
1000S.: (15.00...27.00)
5th speed 1/min: 2200 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 TD travel mm: 2.40...2.60 Shutoff mm: (2.00...3.00) electromagnet Volt: 12 Del. quantity cm3/: 33.00...35.00 1000s.: (29.00...39.00) Shutoff electromagnet Volt: 12 4th speed 1/min: 900 9th speed 1/min: 1950 TD travel mm: 0.40...1.20 Shutoff mm: (0.10...1.50) electromagnet Volt: 12 Del. quantity cm3/: 43.3...45.7 "D" 1000s.: (42.00...47.00) Shutoff electromagnet Volt: 12 10th speed 1/min: 1700 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 1/min: 500 1st speed Del. quantity cm3/: 40.30...42.70 1000s.: (39.00...44.00) Supply-pump bar: 5.40...6.00 pressure 1/min: 500 12th speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 1/min: 1150 Dal. quyntity cm3/: 28.3...28.7 "F" 2nd speed 1000s.: (25.50...31.50) Supply-pump bar: 6.90...7.50 pressure 18th speed 1/min: 1150 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 35.0...36.0 "E" 1000s.: (33.00...38.00) 3rd speed 1/min: 1250 Supply-pump bar: 7.10...7.70 pressure Shutoff Mech. shutoff: electromagnet Volt: 12 4th speed 1/min: 2000 Electr. shutoff: Supply-pump pressure bar: 8.70...9.30 1/min: 425 1st speed Shutoff Del. quantity cm3/: 0.00...3.00 electromagnet Volt: 12 1000s.: (0.00...3.00) Shutoff Overlow quantity at overflow valve: electromagnet volt: -1st speed 1/min: 500 Idle delivery: Shutoff electromagnet Volt: 12 1/min: 425 1st speed : 97.30...141.70 Overflow Shutoff cm3/10s: (82.30...156.70) 1/min: 1950 *quantity* electromagnet Volt: 12 2nd speed Del. quantity cm3/: 6.00...8.00 1000s.: (3.00...11.00) cm3/: 3.0 Shutoff electromagnet Volt: 12 Dispersion : 115.30...184.80 Overflow | 1000s.: (4.0) cm3/10s: (100.30...199.80) quantity 1/min: 500 2nd speed Shutoff Delivery-quant, and breakaway char.: electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1000s.: (0.00...6.00) 2nd 88. 1/min: 2400 Shut 857 Part-load del.at 3rd inj.-gty.

N20

terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) Spacing mm: 20.0 1st speed 1/min: 1250 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.00...23.00 1000s.: (20.00...25.03) Automatic starting fuel delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...60.00 1000s.: (30.00...60.00) 1/min: 480 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...35.00 1000s.: (25.00...35.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...70.00 1000s.: (30.00...70.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 2.7...2.9 K KF mm: KOT MS mm: 1.6...2.0 mm: 41.0...44.0 Ya mm: 64.0...78.0 Yb Remarks: : FB: 0.43 MM

: KDEP 1151

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high fullload delivery

Note inst. in remarks column

Test scheet : VMA

Edition : 05.05.94 : 09.06.52 replaces Calibrating oil : ISO-4113

: VE5/11F1900L179 Injection pump Type number : 0 460 415 007

Customer Part-No. :

Customer-specific information

Customer

: HR 592 HTJ/9 MARINE Erigine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed Charge press. hPa: 1000

mm: 4.90...5.30 Setting value

Supply-pump pressure

1/min: 1500 Speed

N22

hPa: 1000 Charge press

Setting value bar: 4.70...5.30

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 66.50...67.50 Dispersion cm3/: 3.5 1000s.: (3.5)

Full-load del. w/out charge press.:

1/min: 600

Del. quantity cm3/

1000s.: 41.50...42.50

Low-idle speed regulation

1/min: 420 Speed

Del. quantity cm3/

1000s.: 19.50...25.50

Del. quantity cm3/: 3.5

1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 2050 Charge press hPa: 1000

Del. quantity cm3/

1000s.: 36.00...42.00

Start:

1/min: 100 Speed

Del. quantity cm3/: 50.00...76.00

1000s.: 50.00 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1900 2nd speed

hPa: 1000 Charge press

TD travel mm: 7.10...7.90

mm: (6.70...8.30)

1/min: 1500 3rd speed

hPa: 1000 Charge press

TD travel mm: 4.90...5.30

mm: (4.30...5.90)

1/min: 1000 4th speed

hPa: 1000 Charge press

mm: 1.50...2.30 TD travel

mm: (1.10...2.70)

Supply-pump pressure characteristic:

1st speed 1/min: 1900

Charge press. hPa: 1000 Charge press. hPa: -Supply-pump Del. quantity cm3/: 0.00...3.00 pressure bar: 6.00...6.60 2nd speed 1/min: 1500 Charge press. hPa: 1000 1000s.: (0.00...3.00) Shutoff electromagnet volt: 12 Supply-pump pressure bar: 4.70...5.30 Idle delivery: 1/min: 600 3rd speed Charge press. hPa: 1000 1st speed 1/min: 420 Del. quantity cm3/: 19.50...25.50 Supply-pump bar: 1.70...2.30 pressure 1000s.: (18.50...26.50) cm3/: 3.5 Dispersion Overlow quantity at overflow valve: 10003.: (3.5) 2nd speed 1/min: 650 1st speed 1/min: 600 Del. quantity cm3/: 0.00...2.00 1000s.: (0.00...2.00)
3rd speed 1/min: 500
Del. quantity cm3/: 13.00...21.00
1000s.: (12.00...22.00) Charge press. hPa: -Overflow : 41.70...86.10 cm3/10s: (26.70...101.10) quantity 2rid speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55.60...139.00 Automatic starting fuel delivery: cm3/10s: (40.60...154.00) quantity 1st speed 1/min: 280 Delivery-quant. and breakaway char.: Del. quantity cm3/: 50.00...76.00 1000s.: (50.00...76.00) 1nd speed 1/min: 700* 2nd speed 1/min: 380 Charge-air pressure-setting Del. quantity cm3/: 29.00...55.00 hPa: 300 point 10003.: (29.00...55.00) LDA-stroke mm: 4.5 Del. quantity cm3/: 51.00...52.00 1000s.: (49.00...54.00) 4th speed 1/min: 100 Del. quantity cm3/: 50.00...76.00 1/min: 2060 1000s.: (50.00...76.00) 5th speed Charge press. hPa: 1000 Del. quantity cm3/: 36.00...42.00 1000s.: (34.00...44.00) 9th speed 1/min: 1900 Shutoff electromagnet: Cut-in Charge press. hPa: 1000 Del. quantity cm3/: 59.00...62.00 1000S.: (58.30...62.70) 12th speed 1/min: 1500 min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Charge press. hPa: 1000 Del. quyntity cm3/: 66.50...67.50 Designation 1000s.: (65.00...69.00) K mm: -18th speed 1/min: 600 KF mm: 5.8...5.2 Charge press. hPa: mm: 0.6...1.0 MS Del. quantity cm3/: 41.50...42.50 SVS max. mm: 3.5 1000s.: (39.50...44.50) LDA stroke mm: 4.5 mm: 37.2...39.2 mm: 50.5...55.5 Ya Mech. shutoff: Yb Mech. Abstellung: Remarks: 1st speed 1/min: 1900 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Operate control lever after each manifold-pressure compensator pressure change. Electr. shutoff: * Correction at adjusting nut 1st speed 1/min: 420

N23

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Note inst. in remarks column

Test scheet : SNF Edition : 05.05.94 replaces : 04.84 Calibrating oil : ISO-4113

Injection pump : VE6/11F1150R92 Type number : 0 460 416 020

Customer Fart-No. :

Customer-specific information

Customer : SNF

Engine : WD 611.85

Power KW: 73

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

Setting value mm: 5.30...5.70

Supply-pump pressure

Speed 1/min: 1000

N25

Setting value bar: 6.20...6.80

Full-load del. w/out charge press.:

Speed 1/min: 800

Del. quantity cm3/

1000s.: 61.5...62.5

Dispersion cm3/: 3.5

1000s.: (3,5)

Low-idle speed regulation

Speed 1/min: 300

Del. quantity cm3/

1000s.: 14.00...18.00

Del. quantity cm3/: 3.5

1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 1200

Del. quantity cm3/

1000s.: 25.50...29.50

Start:

Speed 1/min: 100

mind 1000s.: 55.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150

TD travel mm: 6.80...7.60

mm: (6.50...7.90)

3rd speed 1/min: 1000

TD travel mm: 5.30...5.70

mm: (4.80...6,20)

4th speed 1/min: 700

TD travel mm: 1.60...2.40

mm: (1.30...2.70)

Supply-pump pressure characteristic:

1st speed 1/min: 1150

Supply-pump

pressure bar: 7.00...7.60

2nd speed 1/min: 1000

Supply-pump

pressure bar: 6.20...6.80

3rd speed 1/min: 500

Supply-pump

pressure bar: 3.40...4.00

Overlow quantity at overflow valve:

1st speed 1/min: 500

Overflow : 41.70...83.40 cm3/10s: (26.7G...98.40) quantity 2nd speed 1/min: 1100

Overflow : 55.60...139.00 cm3/10s: (40.60...154.00) quantity

Delivery-quant. and breakaway char .:

2nd speed 1/min: 1300

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00)

3rd speed 1/min: 1250 Del. quantity cm3/: 2.00...18.00

1000s.: (2.00...18.00)
5th speed 1/min: 1200
Del. quantity cm3/: 25.50...29.50
1000s.: (21.50...33.59)

9th speed 1/min: 1100

Del. quantity cm3/: 64.00...67.00 1000s.: (63.00...68.00)

1/min: 800 12th speed

Del. quyntity am3/: 61.50...62.50 1000s.: (59.70...64.30)

1/min: 500 20th speed

Del. quantity cm3/: 57.50...60.50 1000s.: (56.50...61.50)

Mech. shutoff: Mech. Abstellung:

1000s.: (0.00...3.00)

Idle delivery:

1/min: 300 1st speed

Del. quantity cm3/: 14.00...18.00

1000s.: (12.00...20.00) cm3/: 3.5 Dispersion

1000s.: (3.5)

2nd speed 1/min: 420

Del. quantity cm3/: 0.00...3.00

1000s.: (0.00...3.00)

3rd speed 1/min: 350 Del. quantity cm3/: 2.00...10.00

1000s.: (2.00...10.00)

Automatic starting fuel delivery:

1st speed 1/min: 170

Del. quantity cm3/: 65.00...125.00

1000s.: (65.00...125.00)

2nd speed 1/min: 300

Del. quantity cm3/: 28.00...52.00

1000s.: (28.00...52.00)

4th speed 1/min: 100

N26

Del. quantity cm3/: 65.00...125.00

1000s.: (55.00...115.00)

Mounting and assembly dimensions:

Designation

mm: · KF mm: 5.2...5.4 mm: 1.3...1.5 MS SVS max. mm: 6.0 Ya

mm: 37.2...39.2 mm: 46.2...54.8 Yb

Remarks:

Ya = Distance between VE flange and speed-control lever in idle

position

Measurement point = edge of control

Lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed

position

Measurement point = edge of control

lever on distributor-head end